EXPERT ADVICE AND TIPS FOR EVERY AMIGA ENTHUSIAST

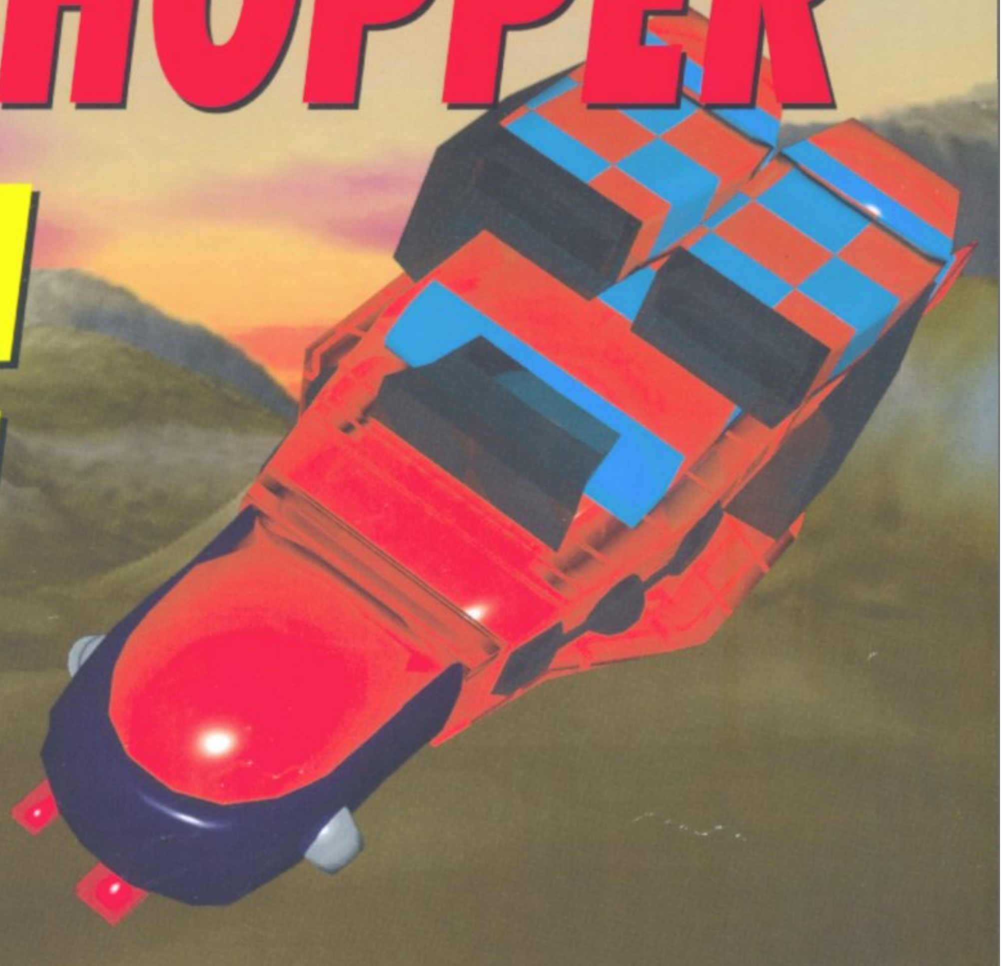
WIN! a copy of Wordworth 3

AMIGA SHOPPER

From the makers of AMIGA FORMAT

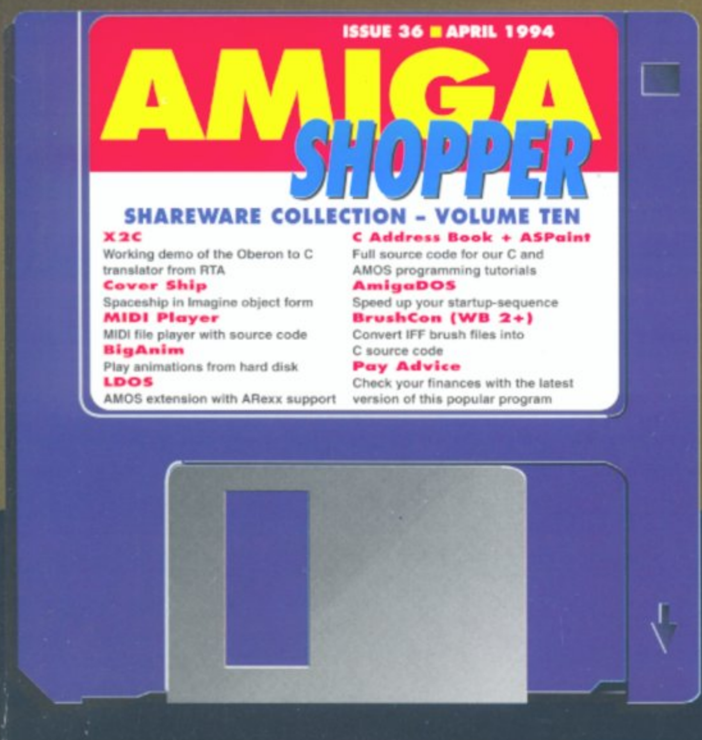
ISSUE 36 • APRIL 1994 • £2.95

YOUR DEFINITIVE AMIGA GUIDE



YOU CAN DO THIS!

Create simply stunning 3D images – we show you all you need...



- **Astonishingly real real-time digitising – for under £200**
- **Why you need to know about object-oriented programming**
- **Multimedia on your Amiga!**

PLUS 12 pages packed with Amiga Answers; PD; C programming; AMOS; DTP; AmigaDOS; news; ARexx; MIDI; video; *and lots more...*

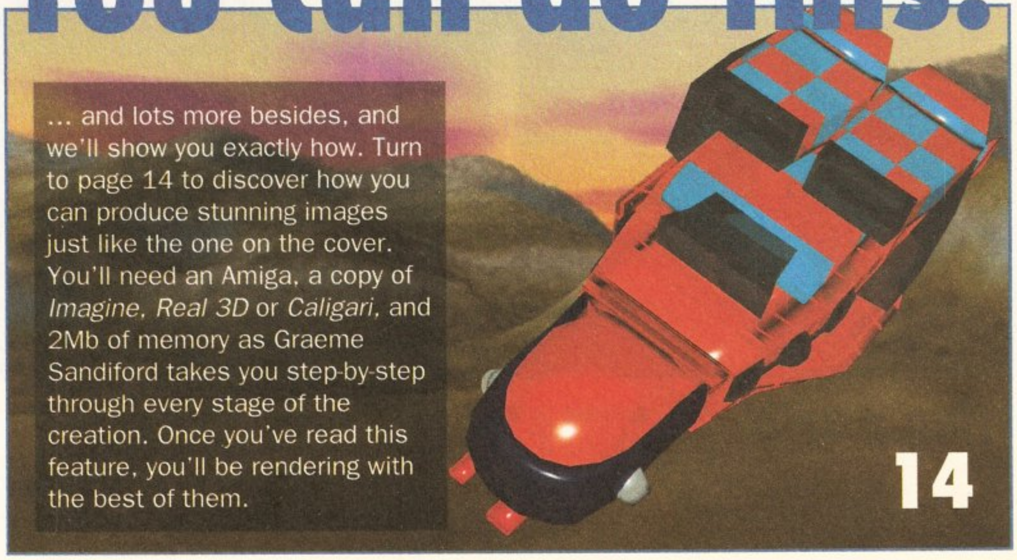
Future Publishing
Your guarantee of value

04
9 770961 730049

IN THIS ISSUE

AMIGA SHOPPER
ISSUE 36 • APRIL 1994

You can do this!



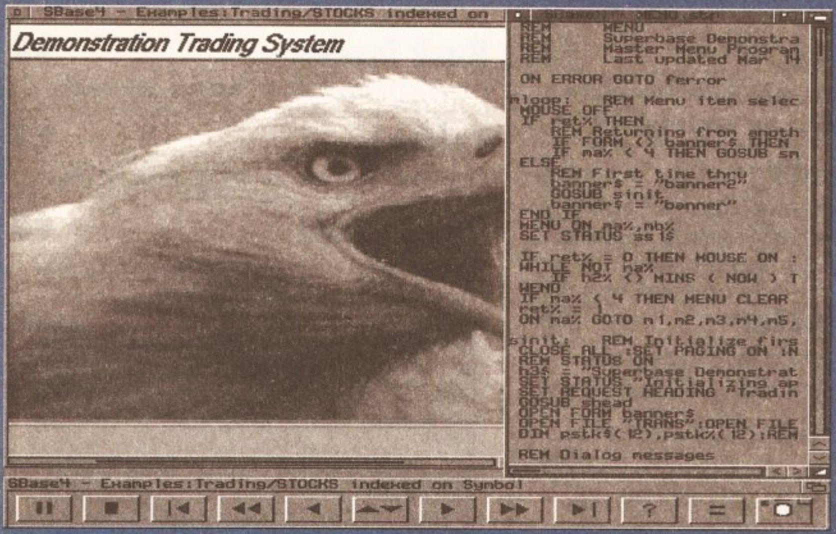
... and lots more besides, and we'll show you exactly how. Turn to page 14 to discover how you can produce stunning images just like the one on the cover. You'll need an Amiga, a copy of *Imagine*, *Real 3D* or *Caligari*, and 2Mb of memory as Graeme Sandiford takes you step-by-step through every stage of the creation. Once you've read this feature, you'll be rendering with the best of them.

14

Cover Disk Offers

from Amiga User International and HiSoft/Oxxi

SBase 4 from only £69.95!



SBase 4 supports IFF (inc HAM) images. SBase 4 Professional includes a powerful DML programming language

You've tried out the cover disk ... now get the most up-to-date version of SBase 4 at an incredible, never-to-be-repeated price!

Offers valid until 11 March 1994 and subject to availability

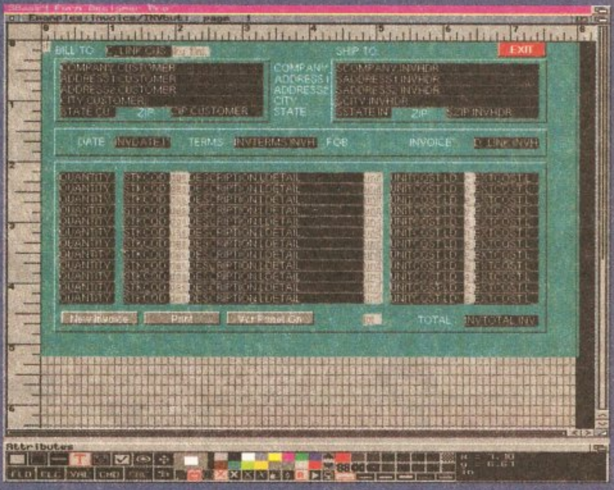
SBase 4 Personal, SBase 4 Professional

Both SBase Personal and SBase Professional are full-featured, fully relational and extremely powerful databases with pull-down menus, multiple windows, complete access to your Amiga's multi-tasking environment and now they are compatible with AmigaDOS 3.0 and the AGA chip set.

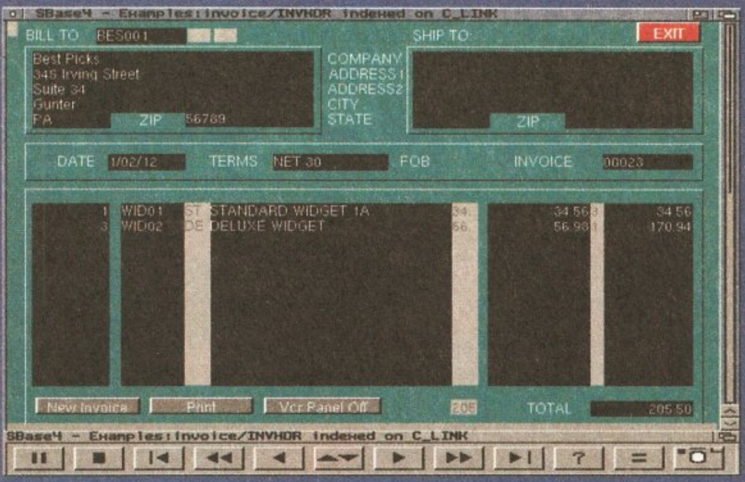
SBase 4 imposes no limits on your database (except for disk and memory constraints) and allows flexible control over your data with the *Filter* and *Query* features. Use the *Page View & Table View* modes to customise the data display, bring up external files and display or play them, produce detailed reports using multiple sorts, date-stamps, record averages, sub-totals, totals, multi columns etc.

SBase Professional includes a powerful BASIC-like database management language with ARexx support. This allows you to manipulate your data and variables as well as forms, index files, records and system parameters. Commands are included to facilitate data display, reporting, i/o, telecommunications, program flow, debugging and more.

With SBase 4 Professional applications are only limited by your imagination (and perhaps your computer's memory!). SBase 4 Professional normally costs £249, SBase 4 Personal £129. Owners of earlier versions should phone for upgrade prices.



Create your own applications with the superb Forms Designer



A complete invoicing/ordering system designed with SBase 4

Credit/Debit Card Orders

0525 718181

Phone between 9am and 7pm Monday to Friday to place an order using your Mastercard, Access, Visa, Switch, Connect etc. card. We will quote you a firm delivery date on receipt of your order which will be no longer than 28 days and usually within 5 days. For goods in stock we can offer a next day delivery service for £6.

Order Form

VISA Access

Please rush me the following special offers from Amiga User International and HiSoft/Oxxi

- SBase 4 Personal, 1.3g @ £69.95 + £2 p&p
- SBase 4 Professional, 1.3g @ £139 + £4 p&p

Signed:

Name:

Address:

Card No:

Expiry and Issue #:

Please send with cheque/PO or card details to:

HiSoft
High Quality Software
The Old School Greenfield
Bedford MK45 5DE UK.
Tel +44 (0) 525 718181
Fax +44 (0) 525 713716

COMMENT



The editor, Cliff Ramshaw, offers his penny's worth...

Let's face it, everyone likes reading reviews of the latest and greatest software and hardware. We all like to be able to see the limits to which the Amiga can be pushed, even if we can't afford to push it to those limits ourselves.

The thing is, though, we don't actually go out and buy new stuff for our machines that often. We spend most of our time using what we've got.

That's why trhe main feature is a "how to" article – we're showing you just how you can make superb ray-traced images.

I intend to run plenty of this sort of thing over the coming months – articles to help you unleash your creativity without you having to spend the earth. Don't worry, though, we'll still be taking a good hard look at all those exciting new hardware and software products,

Events

3–8 April – Hannover Fair. Hannover, Germany. Contact Hannover Fair Information Centre ☎ 081 688 9541.

16 April – Spring All Micro Show. Bingley Hall, Staffordshire Showground. Contact Sharward Services ☎ 0473 272002.

22-24 April – Midi, Electronic Music and Recording Show. Wembley Conference Centre, London. Contact Westminster Exhibitions ☎ 0222 512128.

Gold disk rumours greatly exaggerated

Rumours that American software developers Gold Disk are pulling out of the Amiga market are untrue, a spokesman for the company told *Amiga Shopper*.

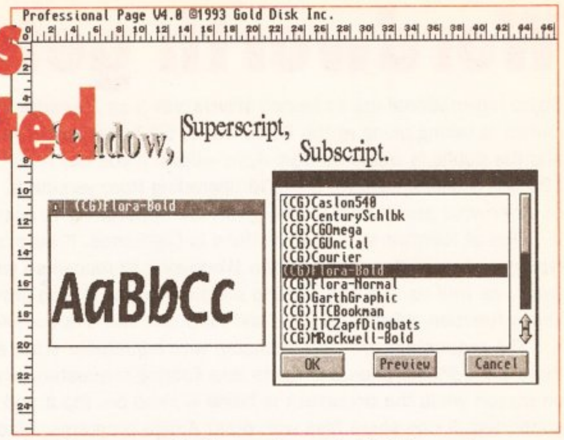
The rumours have been circulating across bulletin boards for some time now, and have been causing considerable concern. Gold Disk are one of the most respected Amiga developers, having many important products to their name, including *Professional Page, Professional Draw, Professional Calc* and *Video Director*.

Steve Elpers, Gold Disk's sales manager, informed *Amiga Shopper* that the rumour has been inflated tremendously. "We have stopped development on new products," he said, "but will continue development on current products."

"We have scaled back quite a bit," he continued. *Amiga Shopper* understands this is because of the Amiga's extremely bleak positioning in America at the moment. Many dealers can't get hold of A1200s to sell, only A4000s, and the levels of service and support are particularly bad. "We will not be releasing any new titles unless something changes," Elpers emphasised.

Gold Disk's move will not prejudice their existing products, which will continue to be supported and upgraded. Of particular interest is *Professional Page*, the company's flagship title. When asked if Gold Disk would be able to compete with the forthcoming *PageStream 3* from Soft-Logik, Elpers said, "I'd certainly hope so. I don't know if Soft-Logik will be able to deliver all they've promised."

When asked about the next version of *Professional Page*, Elpers replied, "We're always working on *Pro Page*." He was, however, unable to give a date for the release or a feature list.



Despite rumours to the contrary, Gold Disk are to continue development of Professional Page.

Get your fonts here

A set of over 50 scalable fonts, for use in video and DTP work, has been released by Videoworld Multimedia.

The fonts, brought together in the *Nexus Pro Videofonts* set, come on five disks, and are compatible with Workbench 2 and 3 as well as a long list of Amiga applications that includes *Deluxe Paint, Scala, Professional Page* and *PageSetter*.

The set costs £14.99 from Videoworld Multimedia ☎ 041 641 1142.

Multimedia seminar

If you're keen to learn about the Amiga's role in multimedia, desktop video and music, then you could do worse than take a place at a seminar that's being hosted by Premier Vision.

The seminar will be taking place at King's College, London, on 14th March. Places are £99 plus VAT each. Once there, you'll be able to see Amiga experts putting the very latest hardware and software through its paces. A number of short presentations will be given throughout the day, each followed by a question and answers session, giving you plenty of opportunity to find out what you need to know. Premier Vision ☎ 071 274 4407.

Cheaper colour printing



After dropping the price of their SJ-144 colour printer, Star Micronics are ready to fight the big names.

Star Micronics have dropped the recommended retail price of their SJ-144 colour printer from £569 to £459. Star claim that the change now makes the SJ-144 the cheapest thermal colour printer on the market.

Competition in the colour printer market is particularly stiff at the moment, but Star are keen to point out the advantages of their model over the more common colour ink-jet printers produced by the likes of Canon and Hewlett-Packard. The two features that Star highlight are the printer's use of colour pigments rather than liquid dyes, to produce more vibrant tones, and the inclusion of four process colours (cyan, magenta, yellow and black) in the print cartridge, enabling it to print clear blacks without having to compose them from the three other colours.

The printer's other features include a 15 LED status display, eight resident fonts, and a resolution of 360 by 360 dots per inch. It can achieve a printing speed of up to 1.4 pages per minute.

For more information, contact Star Micronics on ☎ 0494 471111.

Wordworth gets London launch

Digita International are to launch *Wordworth 3* on Thursday 10th March. The launch is taking place at the Silica Store, 52 Tottenham Court Road, London, and the public is welcome from 4pm – 9pm. If you buy it on the day, it'll cost £99.99, a saving of £50. If you're upgrading from version 2, £49.99. Users of other word processors will be given the opportunity to upgrade for £59.99.

One of *Wordworth 3*'s innovations is DigiSense. It auto-corrects your typing mistakes. You can program *Wordworth* to recognise your own common typos, as well as use it to expand simple macros. It also provides you with a library function, which can save and load text into a document.

The requesters are user-definable with adjustable sizes and typefaces; there are editable pop-up gadgets and floating requesters which can be kept on screen while the document is being worked on. Input and output is well-supported: it can share files with other Amiga programs, Macs, Microsoft Windows and MS-DOS. Its Print Manager program provides optimised drivers for dot matrix, Deskjet, Laserjet and Bubble Jet printers.



Wordworth 3 will correct your typos.

After the launch day, the program will sell for £149.99, including a pack of 50 Agfa fonts. Digita Int. ☎ 0395 270273.

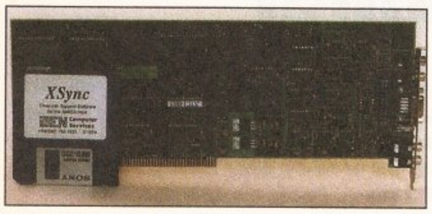
Keep your videos in sync

XSync, from ZEN Computer Services, is a plug in card designed to help you synchronise your Amiga to an external video or audio source. In addition, it will enable you to control up to two video decks or MIDI musical devices.

Coming in Zorro-II form for the A1500, 2000, 3000 or 4000, XSync is available in a number of configurations: with just a Vertical Interval TimeCode reader, a Linear TimeCode reader, and one or two serial ports. The base cost is £450, with extra options costing from £90 each.

The board's synchronisation facilities enable it to be used in conjunction with *MediaPoint*, Xanadu's ADC16 hard disk audio system, ZEN's *EUROtitler* Subtitling system and Sunrize's Studio 16 sampling system.

Its serial ports will operate at up to 38,400 baud, and can be configured as RS232, RS422 or MIDI. In RS422 mode they can be used to control professional video machines such as UVW Betacam machines.



ZEN Computer Services ☎ 061 793 1931.

Help is at hand

Struggling with your Amiga? Need advice on graphics, video or DTP? Videoworld Multimedia have set up a consultancy service that might be of use.

For the price of £15 per year, customers will be able to call upon Videoworld's expertise between 9am and 9pm. They are also offering a number of additional services: scanning and framegrabbing, colour printing, public domain distribution, tuition courses and buying advice. Registered customers will also be eligible for discounts on Amiga software and hardware.

Calls to Videoworld's helpline are normally charged at 48p per minute (peak) or 36p per minute (cheap rate), but the first fifty people to register with the service will be able to make their first month's worth of calls at normal phone rates.

For more details, contact Videoworld Multimedia on ☎ 041 641 1142.

A mania for demos

If you're into making demos or creating exciting video sequences, you may well be into *Demo-Maniac*, the latest release from Black Legend Software.

Demo-Maniac enables the non-programmer to create impressive visual effects by combining sequences of pre-programmed effects. These effects occur on screen 'layers', with the possibility of overlaying up to six layers on a single display. Possible effects include such things as bouncing pictures and vector landscapes, and all can be supplied with parameters by the user to allow maximum versatility. It is also possible to add your own assembly language effects, or to add effects via to-be-released data disks.

The IFF picture format is supported by the program, as is the AGA chipset (though it's not necessary). Sound effects can be added. *Demo-Maniac* costs £25.99. For a free information pack contact: AS DemoManiac InfoPack, Black Legend UK Ltd, Fulling Mill Barn, Mill Lane, Welwyn, Herts. AL6 9NP.

CompuServe connection costs cut

Connection rates for CompuServe, the on-line information service, have been cut by 40 percent. The charges apply only to services such as interactive forums, travel, financial, reference and entertainment, which are charged at an hourly rate. Over 50 services are also provided that cost no more than £6.20 a month.

Connection rates are now as follows (prices are approximate, since fees are payable in dollars): £3.30 for 300, 1200 and 2400 baud users, and £6.60 for 9600 baud users.

For more information, contact CompuServe UK on ☎ 0734 391064.

GCSE study with ADI

Help may be at hand for GCSE students in the form of *ADI GCSE* from Europress Software.

The software comes in three separate packs for Maths, English and French, costing £34.99 each. It carries on the now traditional ADI approach, with ADI the alien guiding students through activities, offering help, encouragement and praise. Topics covered conform to National Curriculum standards.

One feature of the programs is their customisable screens and their ability to play background music while the student revises, presumably in an attempt to calm those restless teenage hearts. Call Europress on ☎ 0625 859333 for more information.

More mail order

It's not addressed specifically to people with Y chromosomes, and it's not an instruction – it's another company ready to send you Amiga related products through the post. They're called Software Express, Inverness, Scotland. ☎ 0463 240168.

Hard drive reservations quashed

Special Reserve's Overdrive hard drive is now back in production and on sale. The drive originally went on sale before Christmas, but problems with an initial batch forced the company to withdraw all units.

These problems have been rectified, with the drive now being supplied with a revised controller and with improvements to its casing and power supply.

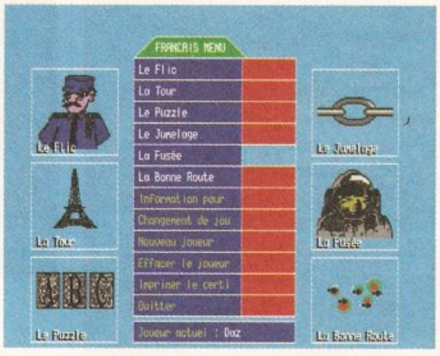


The Overdrive hard drive is designed to connect to an Amiga 1200 via the PCMCIA slot, but will also work with an Amiga 600. Currently two models are available: 250Mb for £299.99 and 340Mb for £379.99. Available to members of Special Reserve. Membership costs £4, and you can join while you're ordering. Special Reserve ☎ 0279 600204.

French tuition made fun

Ten Out Of Ten French is a program that aims to make learning the language fun.

French, apparently, is one of the easiest foreign languages to learn. Ten Out Of Ten, with their new program, intend to make it even easier. The package conforms to National Curriculum standards, and includes a grading system applicable to all topics normally taught at school. In addition, it comes with six games. It costs £25.95 from Ten Out Of Ten Educational Systems ☎ 0742 780370.



Learn to speak French in a relaxed and enjoyable environment with Ten Out Of Ten.

Printer supplies from Xerox

Xerox are expanding their range office supplies range by including products produced by other manufacturers. As a result, you can now order laser and ink-jet toners for printers produced by Canon and Hewlett-Packard.

Xerox Office Supplies are able to offer HP/Canon Series II (SX) cartridges from £52.03, and HP Deskjet/Dekswriter (High Capacity) cartridges from £17.38. In addition, free next day delivery is promised to customers ordering more than £50 of goods before 1pm.

Xerox Office Supplies ☎ 0923 854774.

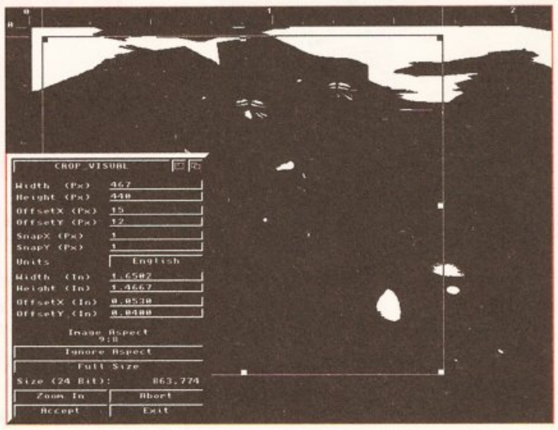
Upgraded killer

One of the most highly-respected programs in the Amiga world, *Art Department Professional*, has been upgraded to take it up to version 2.5.

ASDG's "killer application" has sometimes been criticised for its non-standard user interface. This latest version comes with two different user interfaces – one based on graphical lists, the other on buttons – which can be mixed as the user sees fit.

Among the program's many other enhancements, you will find included support for several 24-bit display cards, including Picasso, Retina and the Video Toaster. Fargo's Primera printer is also supported now. Six new file formats are recognised: CDXL animation format, Digital Broadcaster Jstream, FLC & Fli animations, ICO, and Workbench icons.

Over 100 ARexx scripts are included with the package, along with *CInemorph*, a program to convert streams of images between 24 frames per second and 60 field per second video time bases. Alpha channel blending is now possible with just about every supported file format you can think of. Oh, and they reckon they've improved the manual too.



Art Department Professional has been upgraded and much improved to make it a true "Killer Application."

Art Department Professional 2.5 is distributed in the UK by Meridian ☎ 081 543 3500 for £199.95. Upgrades are available for £39.99 (plus £2 postage and packing) from Emerald Creative Technology ☎ 081 715 8866.

Print your own T-shirts



Quill Marketing are selling a range of papers specially designed to enable transfer to textiles. All you need to do is print from your computer on to the special paper, and then iron the result on to your T-shirt to produce your own unique fashion items.

Different categories of paper are available to suit different printers: Jet Wear for ink-jets, Laser Wear for laser printers and photocopiers, Thermax Wear for thermal wax ribbon printers, and Print 'N Wear for dot matrix printers. The paper is available in 4, 30 and 100 sheet bundles, with prices starting at £6.95 for 4 sheets. Quill Marketing ☎ 0603 748002.

A MIDI Note

Looking for a MIDI keyboard with a specially designed recess for your computer keyboard and mouse mat? Then look no further than the Fatar CMS61. With it you should be able to set up your computer music system on the minimum of desk space, with everything you need easily accessible.

The keyboard itself is a 5 octave, 61 note unit. It is touch sensitive (aren't we all – *Ed*) and features a key transpose facility, an input socket for a foot pedal, two MIDI outputs, an ssignable control wheel and a pitch-bend wheel. It costs £299 and is available from Arbiter Pro MIDI ☎ 081 202 1199.

SCSI harddrive interface

If you're looking for a SCSI interface for your Amiga 2000, 3000 or 4000, then you'll be glad to hear of SCRAM 4000, a SCSI interface on a Zorro card.

As well as supporting SCSI hard drives, SCRAM will also interface with CD-ROM drives and removable media drives. Space is included on the card for memory expansion up to 8Mb, using ZIP DRAMs. The card comes with hard disk prepping software, and costs £99.95 without any memory.

For more information you can call Cozmos Videographics on ☎ 031 539 7273.

Hydra forges a head (or two)

Hydra Systems are to distribute a new accelerator card for A4000 '040 machines. Called Excalibur, the card gives a 400 percent increase in speed and costs £763.75. It is also available in a 33MHz configuration, giving a speed increase of 530 percent. This costs £1351.25. More details on Excalibur later.

Hydra are also keen to point out that now Commodore have discontinued their Ethernet board, Hydra are the only company producing a viable alternative. The product is called Amiganet, and works with all available Amiga models, providing data transfer rates of 10Mb per second. Being an Ethernet networking system, it is usable with a wide variety of network operating systems, including Novell, Envoy, Decnet, Enlan-DFS, TCP/IP and X-Windows. Prices available from Hydra Systems ☎ 0203 473333.

Add another hard drive

Owners of A600s or A1200s running out of hard disk space will be glad to hear of the DataFlyer Expansion Drive system, being sold by the First Computer Centre. With it you can add an external 3.5" IDE hard drive to your Amiga, whether or not you already have an internal drive fitted.

The expansion comes in kit form, as an external case, cabling, screws, jumpers, installation software and instructions. Any drive fitted should be able to take its power from the Amiga's power supply unit, but if not an extra one can be bought from the First Computer Centre.

The DataFlyer Expansion Drive system costs £55. Call the First Computer Centre (☎ 0532 319444) for prices on the drives. If you intend to use your external drive in conjunction with an internal one, it is better to use two drives from the same manufacturer. Compatibility problems have occurred between Quantum and Connor drives.

Amiga specialist printers

Xposure Publications are a new printing house catering specifically for the Amiga user. They will accept work to be printed directly on Amiga disks, avoiding the difficulties encountered when attempting to output work at a Mac-based DTP bureau.

Xpsure accept work submitted in *PageStream*, PostScript, ASCII or specific word processor formats. Prices start at 1,000 A5 leaflets in any one of three colours on white paper for £7.50. Call them on ☎ 061 443 2747.

Correction corner

We'd like to point out that in our February issue's review of *The ARexx Cookbook*, distributed in the UK by Premier Vision, we stated that the price was "reasonable, though once again penalised by the exchange rate." This remark referred to the book's old price of £34.95. It is now available for just £21.95. Premier Vision ☎ 071 274 4407.

While we're at it, here's the correct number for Walkabout Music, who fell prey to the gremlins in last month's news section: ☎ 0726 813807.



The AS Shareware Collection volume X

How to access and use this issue's cover disk.

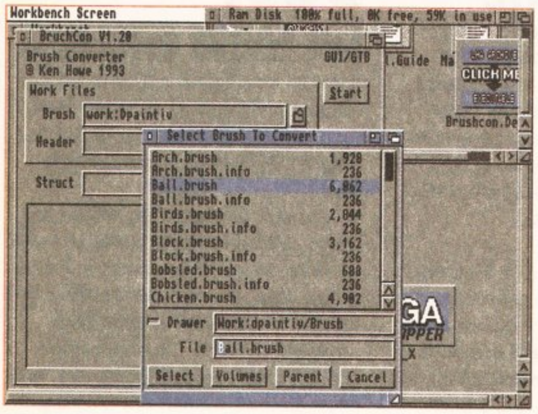
X2C

All Workbenches

X2C is a program that will translate programs written in Oberon 2 into C. Having done so you can then compile the C source code into machine language using an ordinary C compiler. *DICE*, which we gave away with issue 33, can be used for this purpose but, because of slight differences between it and the ANSI C standard, you may have to make a few modifications first.

The version supplied here is a demo version of the commercial package, and it will restrict you to writing programs of no longer than 100 lines or so. For details of how you can buy the commercial version, and for a general introduction to Oberon, turn to page 62.

Having dearchived *X2C* according to the instructions in the box below, you'll be able to read the extensive set of documentation files supplied. They are all held within the docs directory, and you can access them from the Shell by using a text editor such as *More*. The document of primary interest is **Extacy.doc**, which describes how to set up and use your **X2C** demo. You'll also find documents describing Oberon's features.



Brushcon will convert your standard IFF brushes into C structures, ready to compile with your own programs.

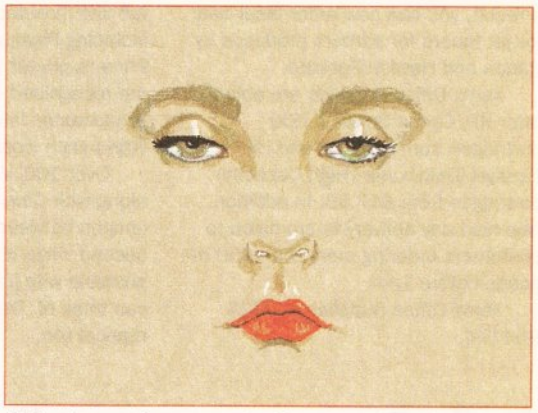
It's a relatively simple matter to set *X2C* up. You'll need to make an assign.You can enter this into the Shell before you run *X2C*, but for best results, type it into your user-startup or startup-sequence file so that it becomes permanent, and then reboot:

```
assign x2c: MyDisk:
```

(Type this as one single line.) This assumes that **MyDisk:** is the area where you have placed the dearchived files. Chanage the name according to the place you've chosen.

Once you've translated your Oberon code to C code, via the **X2C** command, you'll need to compile and link it with a C compiler. To this end, you'll need to have **x2c.h** in your include path, and to instruct the linker as to where it can find the file **x2c.o**.

If you are using *DICE*, you will need to link with the alternative version of **x2c.o**, which you'll find in the **DICE** directory of the demo. You'll also find a slightly different version of the library file **InOut.o** (an Oberon equivalent to **stdio.h**) which you should link with in preference to the default one.



Not got enough memory to play your animations? Never fear, BigAnim will play them from disk.

COVER SHIP

All Workbenches

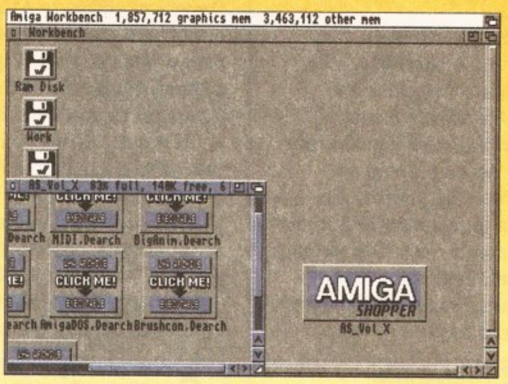
Use this archive in conjunction with our cover feature, *You Can Do This!*, starting on page 14. It contains the main element of the cover image, the spaceship, as an *Imagine* object.

If you're one of the people who got Imagine free with issue 53 of *Amiga Format*, or if you happen to own *Imagine* anyway, then you're in luck. If not, then you're going to have to follow the tutorial through and create the image yourself from scratch, but don't worry – you'll find

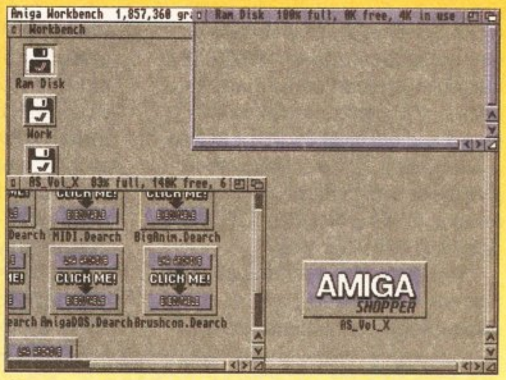
SO JUST HOW DO YOU GET AT ALL THIS

❶ First you should switch on and boot up your Amiga with Workbench. The programs on the disk have all been compressed, and must be de-compressed before they can be properly used. This process is pretty much automatic, so long as you follow the steps detailed here. Before you go any further you need to decide where you want to de-compress the cover disk files to. If you have plenty of RAM, you may want to use the RAM disk. Another option is to de-compress to your hard disk. Otherwise, you'll need to de-compress onto another floppy disk. If you choose this last option, then you'll need to have several blank floppies standing by. If you only have a single floppy drive, be prepared for lots of disk swapping. You can format floppies from the Workbench by single-clicking on their icon and then selecting the **Format Disk** or **Initialize** menu option (all depending on the particular version of Workbench you are using).

Now insert the copy that you've made of this month's cover disk. You'll see the ***Amiga Shopper*** icon appear on the screen.



❷ The next step is to double-click with the left-hand mouse button on the ***Amiga Shopper*** icon. A window for the disk will then open, in which will be displayed the four icons for the software on the disk this month. The programs are all stored as archives and can be accessed via the icons shown in the window. These files have names that are terminated with the characters "**.Dearch**".



❸ Let's say that you want to de-compress the *TrashIcon* package. You'll need to decide where you want the de-compressed material to be stored. If it's onto a floppy, then insert the disk and open its window. If you want to place the files on your hard disk or your RAM drive, then open their window instead. (Bear in mind that the contents of your RAM drive are lost when the power is switched off.)

VITAL: READ THIS FIRST

The first thing that you *must* do with your cover disk is to write-protect it. To do this, ensure that the movable plastic tab on the disk is in the open position – that is, you can see through the hole. This means nothing can now be written to the disk, especially viruses, which are the last thing you want.

The next important step is to make a back-up copy of the cover disk. The easiest way to do this is to open a Shell window and then type the following at the prompt:

```
diskcopy df0: to df0:
```

Your Amiga will now ask you to insert the **SOURCE** disk (that's the cover disk) in **df0:** and then press the **<Return>** key to continue.

Your computer will now read some data from the disk before another window appears asking for the DESTINATION disk (the empty disk that you want to make a copy on). You'll find that you need to swap disks like this several times.

If you have more than one floppy drive, you can copy from one drive to the other, like this:

```
diskcopy df0: to df1:
```

Right, now that you've made a copy of the cover disk, hide the original in a very safe place and work *only* with the duplicate.

CAN'T READ THE DISK?

We duplicate tens of thousands of disks, so inevitably a very small number will be corrupted. You'll know if this has happened to you because you'll get a message saying either it isn't a DOS disk or that a READ ERROR has occurred.

The solution is straightforward. Just send the faulty disk to the address below, enclosing a SAE for the return of your replacement disk and we'll pay the return postage. The address is:

***Amiga Shopper* 34**
PO Box 21
Daventry
NN11 5BU

A replacement disk should then come rattling through your letterbox within a short while.

instructions for using both *Real 3D* and *Caligari* instead.

To be on the safe side you'll need 2Mb to render the image. Even then, you'll have to add your own textures – we had to strip them off for reasons of space.

To load the spaceship object into Imagine, select the **Detail Editor**, then select **Load** from the **Object** menu. Click on the object in the file requester and finally click on **OK**. Now you're ready to render.

MIDI PLAYER

All Workbenches

This archive contains Paul Overaa's Shell-based MIDI file player, so far as we know the only MIDI file player available for the Amiga. With it you will be able to send any raw MIDI data file from your Amiga directly to a MIDI keyboard. To do so, just type the command **midiplayer** followed by a space and the name of the file you wish to play. For example:

```
midiplayer spanish.mid
```

The archive also contains full source code for the program, which you can peruse at your leisure to learn how such things are written. The program also makes use of Paul Overaa's abstract data-type stack library code (supplied as part of the archive) which was discussed in issue 32.

We've thrown in a MIDI file for you to test the program on, too. It's called **Spanish.MID** and is provided thanks to Ian Waugh of Words & Music. It's part of the Words & Music Classic Collection Volume 2; call ☎ 091 529 4788 for more information.

You'll find an in-depth Programming Masterclass dealing with *MIDI Player* on page 76.

BIGANIM

All Workbenches

This is one of those programs that, while we were reviewing it for our Public Domain World column, we thought, this is so good it must go on the disk! And here it is.

BigAnim's chief feature is its ability to play back much larger animations than you would ordinarily be able to, because it can load in future segments of an animtion from disk while one part is currently playing.

BigAnim needs to be run from the Shell. At its simplest, it can be run by typing its name, followed by a space and the name of the animation file you want to play. The file can by a type 5 or type 7 Anim.

For more information on using *BigAnim*, particularly on how you can customise it to produce the smoothest animations for your particular set-up, consult the program's documentation file, **BigAnim.doc**.

LDOS

All Workbenches

Lurking inside this archive is an extension for AMOS (version 1.3 or above) and AMOS Professional users. It adds a whole host of commands to AMOS, improving in particular on the language's file-handling abilities.

The reason it's appearing here, though, is because it also adds ARexx facilities to AMOS, meaning that you can now write BASIC programs with their own ARexx ports, ready to be controlled by external, automated means. The first part of a tutorial explaining how to put this into effect begins on page 72.

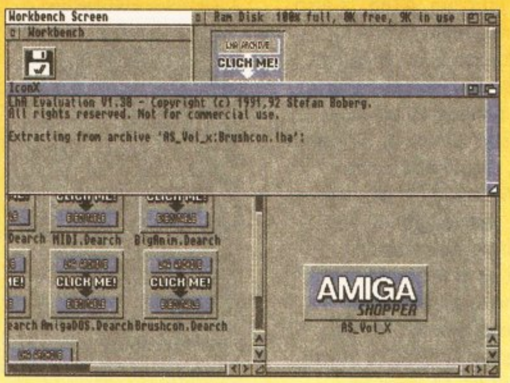
AMOS Professional users should copy the **APSystem/ AMOSPro_LDos.lib** file into the **APSystem** directory of their AMOS disk. Ordinary AMOS users should copy the **extensions/LDos.lib** file into the AMOS directory where they keep all of their AMOS extensions (consult your AMOS manual for further details).

It is also necessary to enter **LDos.lib** as extension number 10 in your ***.ENV** file and enter it as number 10 in your compiler configuration. To complete the setting up procedure, copy the **libs/rexxhost.library** and **libs/req.library** files from the place where you've de-archived LDOS into the **libs:** directory of the disk you boot from when using AMOS.

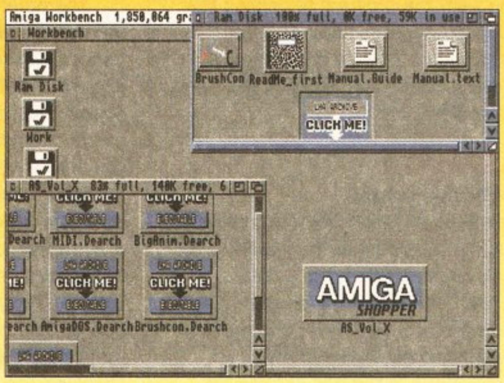
LOVELY SOFTWARE ON YOUR DISK?



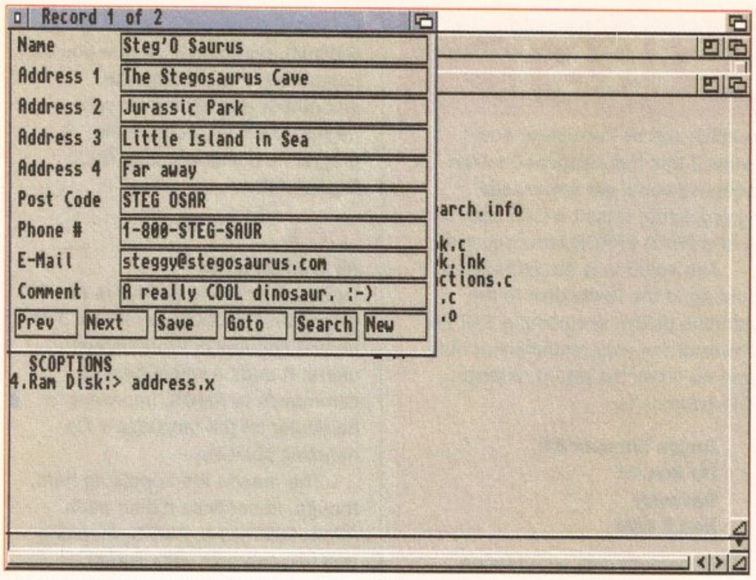
❹ Drag the icon (say **BruchCon.Dearch**) into the destination window. (Drag an icon by putting the mouse pointer over it and keeping the left mouse-button pressed. Release the button when you've placed the icon where you want it.) Now double-click on it. The de-compressing procedure will automatically begin, and another window called **IconX** appears on-screen to tell you how it's going.



❺ In the **IconX** window will be listed all the files as they are extracted from the archive. If you are using an Amiga with only one disk drive then unfortunately you'll have to get involved with a fair bit of disk swapping. A **System Requester** window will appear each time you need to swap disks – simply put whichever disk is requested in the Amiga's drive. (Keep the source disk write-protected to be safe.)



❻ Once the **IconX** window has vanished, the source window will still appear to contain only the **BrushCon.Dearch** icon – that's because the window isn't automatically updated. Click first on the window's close gadget and then open the window again. It will reopen with the packages' icons displayed in their full glory. You can then run the programs or load the files as normal.



Address Book, now that it has a Search function, is really rather handy.

ADDRESS BOOK

All Workbenches

Inside this archive you'll find the latest version of Toby Simpson's *Address Book* program, as covered in our *Sailing Through C* column (page 68 this month).

No changes have been made to the program this month – the same version is supplied as was last month, to aid those who missed the previous issue.

Inside the archive you'll find all the source code, includes and header files that you'll need to compile the program (if you're using a PD or shareware compiler, you'll also need the Commodore Includes and Libraries). It's worth noting that before you can look at any of the source code you'll need to first load into a text editor such as *DME*, the editor supplied with *DICE*.

If you'd like to run Toby's program without first compiling it, just open a Shell, change to the directory in which you've dearchived it, and type the name of the executable version – **address.x**. If you want the program to access the supplied address database, you need to first change directories into the one containing *Address Book* and its source code.

ASPAINT

All Workbenches

Devotees of Jason Holborn's AMOS column will be more than keen to get their hands on this, the latest version of his painting program. It's stored in archived form, and must be dearchived according to the instructions in the box entitled *So Just How Do You Get At All This Loveley Software On Your Disk?* (catchy name, eh?).

To get it running, boot up your copy of AMOS (Easy AMOS or AMOS Professional will also work with it) and load in the file called **ASPAINT.AMOS**. Running it is as easy as pressing the **F1** key or clicking on the **RUN** option.

You'll notice that the main addition this month to the program is a magnify option, enabling you to zoom in on areas of your painting and make fine adjustments. To learn more about how this is implemented, have a look at the *AMOS Action* column on page 82.

AMIGADOS

All Workbenches

Not only is this archive compatible with all Workbenches, it's actually designed to cater for people with more than one Workbench. Or at least half of it is.

Once you've dearchived this you'll find two programs: *IsToo* and *AToo*. The first is a short machine language program that will decide which version of Kickstart you are running. Users of ROM sharers can call this program from their startup-sequence and execute whichever AmigaDOS commands are appropriate to set Workbench up, according to the ROM being used.

The other program, **AToo**, is also startup-sequence related. It is for users of Workbench 2.04 or higher, and will significantly increase the speed of your booting up process. It can decide which version of Kickstart you are using, create and assign necessary RAM-based directories, configure disk device buffers, and execute one of several startup-sequences. In all in all, quite a cracker. For the first installment on how to use these two commands, turn to our regular AmigaDOS guide, *Cracking The Shell*, on page 86.

BRUSHCON

Workbench 2 and above

This handy little utility will, once dearchived, convert standard IFF brushes into C source code, ready for incorporation into your own programs.

You can run the program by double-clicking on its icon from Workbench or by typing **BrushCon** from the Shell (assuming, that is, you've either placed it somewhere in your AmigaDOS path or you're currently in the same directory as it is living).

Using the program is simplicity itself. In the first two text requesters, type the name of the brush to be converted and the name of the C source file you wish to convert. To make things easier, you can click on each text requester's directory gadget to get a nice file requester if you wish. Finally, you need to specify the name of the structure, as it will appear in the C program, that you wish the brush to be converted to, and then click on the **Start** gadget. The process is over in no time.

If you need more information, consult the documentation supplied on disk. It comes in two formats – ordinary text, which can be read using *More*, and, for those lucky enough to own the correct viewer, *Amiga Guide* format.

PAY ADVICE

All Workbenches

This is the latest version of *Pay Advice*. We originally put a version on issue 31's cover disk. It proved so popular with you then that we've decided to let you have this later, much improved version.

Pay Advice enables you to store and keep track of your earnings. It can handle things like tax, National Insurance contributions, bonuses and overtime payments. Its many improvements over early versions include: a re-designed graphical front-end, better error-handling facilities, better search facilities... the list, as they say, goes on.

Documentation for the program is supplied in two formats: ordinary text, and *Amiga Guide*. Double-click on the version you require to find out just how to make the program work best for you.

You can run *Pay Advice* by double-clicking on its icon, or by typing `PayAdvice` from the Shell (assuming it's in your path or you're in its directory).

One assign is needed to ensure *Pay Advice* works properly. This can be typed into the Shell, but, if you intend to use the program a lot, you'd be better off entering it into your user-startup or startup-sequence file:

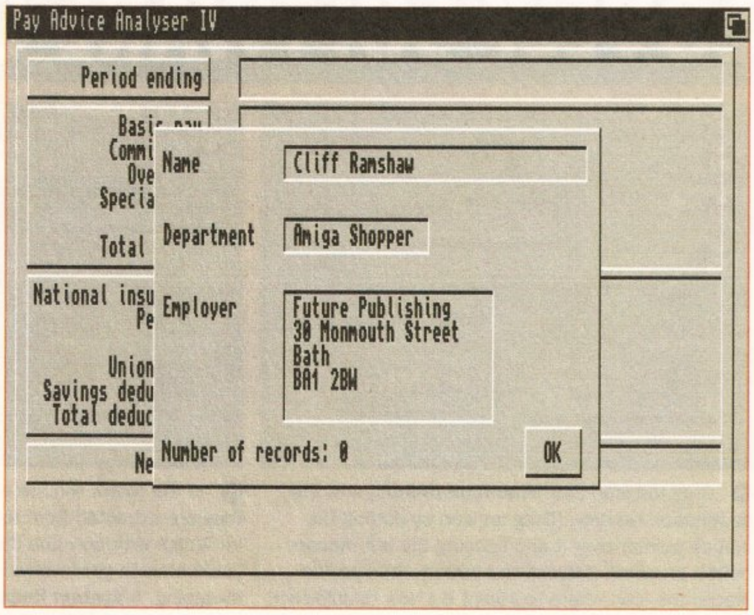
```
assign PayAdvice: Work:PayAdvice/
```

The above assumes you have copied the archive's contents into a drawer called **PayAdvice** on the **Work:** partition of your hard drive. If you've put it elsewhere, change the assign accordingly. If you've dearchived directly to a blank floppy, then you can change the name of the disk to **PayAdvice** and needn't worry about the assign.

Pay Advice is a shareware program. If you find it useful, please pay what the author requests. AS

FAME AND THE AMIGA CODER

If you've written a program that you think the rest of the Amiga community ought to know about, send it in to: Cover Disk Submissions, Amiga Shopper, Future Publishing, 30 Monmouth Street, Bath BA1 2BW.



The latest version of Pay Advice contains a number of enhancements, including a much-improved graphical front end. Now you can keep an accurate track of all that lovely money you're earning (possibly).

INDI DIRECT MAIL

is original and very exciting. Before you buy mail order you must first be confident that you will receive the product you've ordered and that the supplier will still be there in the future, should you need them.
A mail order purchase from INDI is a safe and secure decision and here's why. Indi is a wholly owned subsidiary of a public company now in its eleventh year of trading and specialising in the supply of computer products.
With a group turnover approaching £30 million per annum, INDI have the resources and the purchasing power to offer you the best deals, deliver them next day nationwide and always be around when you need us.

No Deposit Credit 5 Years to Pay

INDI are now able to offer competitive credit facilities on all orders over £100. Payment can be over 12, 24, 36, 48 or 60 Months and can include insurance to cover repayments in the event of sickness or unemployment All credit facilities are subject to status and applicants must be over the age of 18. If you would like a quote, simply call our sales line where acceptance can normally be notified within the hour.

Express Cheque Clearance

Simply write your cheque guarantee card number, name and address on the back of your cheque and we will normally be able to despatch your order the day that we receive your cheque.
Cheques, received without a cheque guarantee card number, will normally clear within a maximum 7 working days.

INDI TELESALES
TEL 0543 419999 FAX 0543 418079
9am - 7pm Monday to Friday
9.30am - 4.30pm Saturdays

Don't send any Money until you are 100% certain that any advertiser has the product that you want in stock and will deliver to you immediately.
Far too often we receives letters from customers who are finding it difficult to obtain a refund from an advertiser that has promised to supply but hasn't.
To give you the confidence to buy from INDI, we have joined the DMA, a very important Independent Authority that demands the highest possible standards from its members. DMA members agree to abide by the British Code of Advertising Practice and to subscribe to the Advertising Standards Board of Finance (ASBOF). Look out for the DMA Symbol. It is your guarantee signifying to the customer the truly professional edge of the Industry.

Checkout More Great Indi Deals Throughout this Magazine

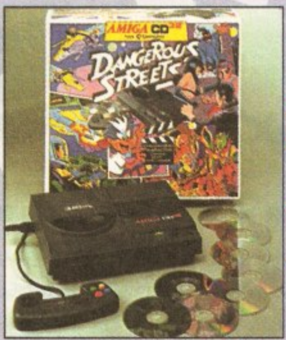
Amiga CD32 FREE OSCAR, DIGGERS, WING COMMANDER AND DANGEROUS STREETS PLUS INDI EXCLUSIVE FREE LEMMINGS

If you are considering a console why compromise. The new Amiga CD32 is leading edge technology, it's faster with more colours and has superior graphics to any other console on the market. As if that's not enough it's also cheaper and with the promise of full motion video it's today's hot product

SAVE £24

£275.00
NEW LOW PRICE

Amiga CD32 FREE OSCAR, DIGGERS, WING COMMANDER AND DANGEROUS STREETS PLUS INDI EXCLUSIVE FREE LEMMINGS



This is the news that all Commodore enthusiasts have been waiting for the new Microbotics SX1 Expansion module arrives March 1994. The Amiga CD32 is no longer just the best 32 bit CD console around, it is now a fully expandable computer. Add a keyboard and printer and increase the memory to 8 Mb, connect to another Amiga, th choice is yours.
The microbotics SX1 is an internal expansion device that simply connects to your Amiga CD32 via the FMV port,the FMV module then plugs into the SX1. Connection could not be simpler.

KEYBOARD OPTION Add a key board by simply plugging into the SX1 and turn your CD32 into a real computer

PRINTER OPTION Now that yo have a real computer, why not add a Panasonic Printe and enjoy serious graphics and Word Processing.

EXTERNAL FLOPPY DRIVE OPTION Add a Zappo Floppy Drive and have access to the thousands of low cost Amiga titles.

MEMORY EXPANSION MODULE Increase the memory up t 8Mb by the simple addition of Industry star dard 32 - bit Simms.

New Amiga CD32 Pack

	Normal Price	Launch Price
1) Amiga CD32+ 4 games + Lemmings	£299.99	£275.00
2) Zappo Drive	£49.99	£48.99
3) Keyboard	£45.99	£45.99
4) SXI Expansion Module	£139.99	£99
	£535.99	£468.98

SAVE £66

ARRIVES MARCH 1994

New CD32 Owners

Can now enjoy all of the advantages of real computing by adding a keyboard ar other standard peripherals. Add a flopp drive and enjoy access to thousands of low cost Amiga titles. Add a printer and move into graphics and word processin The expansion possibilities are as flexib as if you owned and Amiga 1200

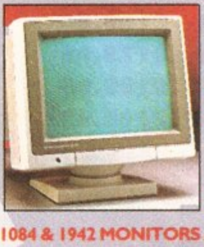
SEPARATE PRICES

SX1 CD32 Expansion Module	£139.99
CD32 Keyboard	£45.99
Zappo Drive sale price	£48.99

Amiga CD32 Software Titles

Dangerous Streets	~~£29.99~~	£19.99
Deepcore	~~£25.99~~	£16.99
Sensible Soccer	~~£24.99~~	£17.99
Mean Arenas	~~£19.99~~	£19.99
Nigel Mansells World Championships	~~£29.99~~	£19.99
Morph	~~£29.99~~	£19.99
Overkill / Lunar	~~£29.99~~	£19.99
Pinball	~~£32.99~~	£21.99
Pirates Gold	~~£29.99~~	£19.99
Zool	~~£29.99~~	£19.99
Alfred Chicken	~~£25.99~~	£16.49
Castles 2	~~£29.99~~	£19.99
Chambers of Shaolin	~~£25.99~~	£17.99
Liberation	~~£34.99~~	£22.99

Commodore 1084 Stereo Monitor



The Commodore 1084s Stereo Monitor. Compatible with all Amiga products. Featuring
* Stereo Sound
* High resolution display
* Ergonomic Design
* Full Amiga Connectivity Pac

£189.99

1084 & 1942 MONITORS ARRIVE LATE FEBRUARY

Commodore 1942 Dual Sync Monitor



This new monitor has been specially designed for the New Amiga 1200 and 4000 computers in order for you to enjoy their fantastic graphics to the full. The 1942 Monitor features built in stereo speakers.

£347.99

Zappo External Floppy Drive



You've seen all the reviews on this popular and affordable second Amiga drive. "Compatible with all Amiga Quality 9 out of 10." Exceptional value for mone **Amiga Computing**

£48.99

Sharp Monitor / TV



The superb Sharp 14" Monitor / TV provides a real alternative to a Commodore Monitor with full function remote control 39 channel electronic auto search tuning, digital on screen display and 1.5 watt Mpo audio output. All you need to know is the low low price. The Sharp Monitor / TV is the product for you complete with scart socket and connectivity cable and including 12 months Warranty. £169.99

£169.99

2 Mb Smartcard
The original and still the only fully PCMCIA compatible memory card for the A600 and A1200. Comes with lifetime guarantee. Beware of cheap immitations. **INDI PRICE £99.99**

4 Mb Smartcard
Same as above but maximum 4Mb.
INDI PRICE £155.99

New Low Price IDE Internal Hard Drives

Indi can now offer top quality 2.5" Internal Hard Drives for the Amiga 600 and 1200 at unbeatable prices. All drives come complete with cable and installation software.

80Mb 2.5" Internal HD's £189.99
120Mb 2.5" Internal HD's £200.99
170Mb 2.5" Internal HD's £239.99

Zappo 601
Trapdoor upgrade for the Amiga 600, 1Mb with RTC.
INDI PRICE £49.99

Zappo 601 NC
As above only 512K, no clock
INDI PRICE £29.99

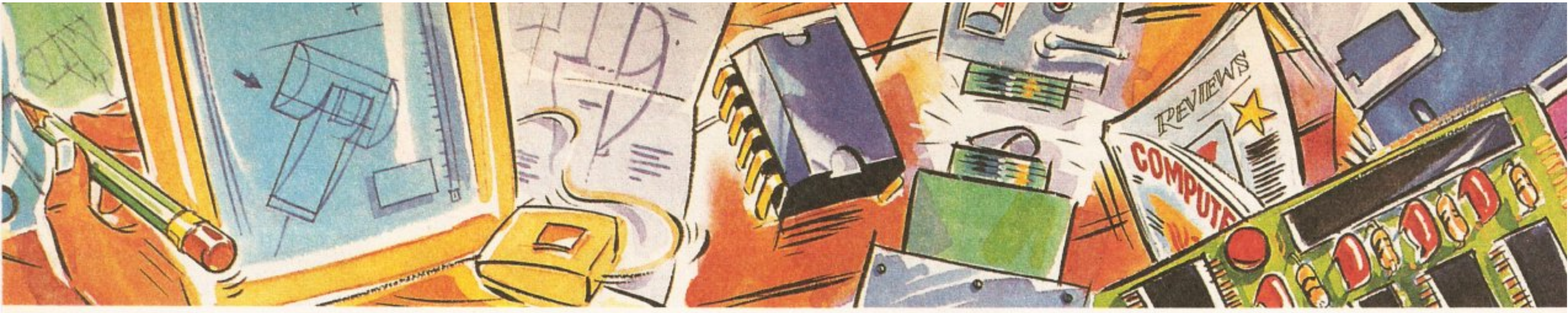
DIRECT MARKETING ASSOCIATION

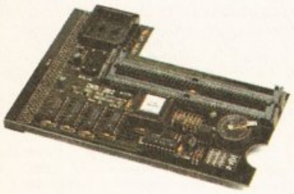
INDI DIRECT MAIL
1 RINGWAY INDUSTRIAL ESTATE, EASTERN AVENUE, LICHFIELD STAFFS. WS13 7SF

Please send
1)..
2)..
3)..
Price.............................. + Delivery
I enclose cheque/ PO for £..............................or charge m
Access / VisaNo..............................Expiry........../........../
Signature..............................Name..............................
Address..............................
....
....
Postcode ....DaytimeTel..............................

AS0494

TEL: 0543 419 999 FAX: 418 07





PC1202-8

Power Computing and DKB have joined forces to produce the ultimate A1200 32-bit memory expansion. The PC1202-8 uses the latest industry standard 32-bit Simm technology which allows you to use 2MB, 4MB and 8MB modules. Simply by adding either a PC1202-8 to your Amiga 1200 will increase its processing speed by 219%, comes with real-time battery backed clock and optional FPU available.

Bare

PC1202-8 .... £79.95
PC1202-8 + 68882 20MHz £99.95

With 2MB

PC1202-8 + 68882 no FPU.. £159.95
PC1202-8 + 68882 20MHz ... £179.95
PC1202-8 + 68882 33MHz ... £199.95
PC1202-8 + 68882 40MHz ... £225.95

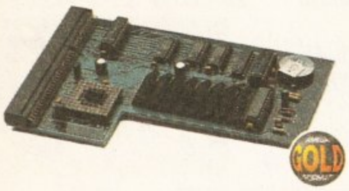
Trade in your 2MB Simm to upgrade to 4MB or 8MB, telephone for details.

With 4MB

PC1202-8 + 688832 no FPU.. £239.95
PC1202-8 + 68882 20MHz ... £259.95
PC1202-8 + 68882 33MHz ... £275.95
PC1202-8 + 68882 40MHz ... £299.95

There is no need to throw away the board if you want to upgrade from 4MB to 8MB. Its simple, just buy an extra 4MB Simm.

Extra 4MB Simm £159.95



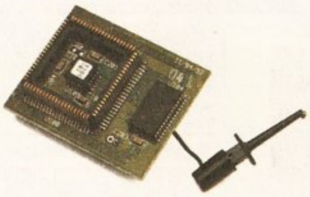
PC1204

The original PC1204 4MB 32-bit memory expansion is still available, and is exceptional value.

PC1204 + 68882 50MHz £319.95

Home Music Kit

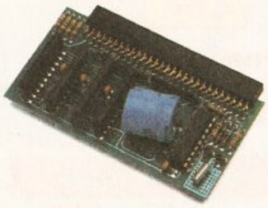
Midi Interface £15.95
Home Music Kit £29.95



MegaChip Ram

Increase your Amiga 500/2000 chip RAM to a total of 2MB. MegaChip does this by using its own 1MB of RAM and drawing extra memory from any other RAM you have installed in your Amiga. No soldering is required.

MegaChip RAM £159



A500 Memory

A 4-chip 512K RAM expansion with a battery backed clock. Free software included. (A500+ compatible)

A500 Card with clock £29

A500 8MB

Expand your Amiga 500 from 2MB to 8MB of RAM. Plugs into the side slot, full auto-config, and through port.

2MB Board £139
4MB Board £219
8MB Board £299

Memory Expansions

We manufacture a vast range of memory cards for the Amiga 500, 500+, 600, 1200, 1500, 2000, 3000 and 4000. Please telephone us for prices and availability.

DKB 3128

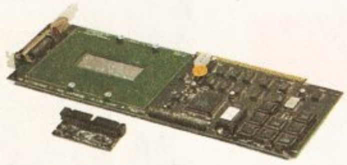
Up to 128MB of RAM on your Amiga 3000/400 using 4,8,16 and 32MB Simm modules. This is a true Zorro III 32-bit memory board.

DKB 3128 0MB RAM .... £POA

Octogen SCSI-2

SCSI-2 board for the Amiga 2000 including memory expansion capabilities of up to 8MB.

Octogen SCSI-2 .... £129



DKB 4091

The DKB 4091 (licensed by Commodore) SCSI Host Adaptor is a high performance board that connects up to seven SCSI devices to your Amiga. The DKB 4091 features: Full Zorro III implementation, fast SCSI-2 implementation, SCSI internal connector and ribbon cable, high density SCSI-2 external connector, direct memory access (DMA) and hardware to install a 3.5" hard drive on the board.

DKB 4091 .... £399.95



Video Backup

Use a VCR as a backup storage device. Two hundred Amiga floppy disks fit on to a 4Hr tape which can be used for an alternative hard disk backup system. What's more you can now watch television on your 1084s monitor. A Scart or Phono version is available.

Video Backup Scart £65
Video Backup Phono £60

GVP Products

Power Computing are now one of the official distributors of GVP 'High end professional' hardware and software.

Image FX- Colour image processing £100
EGS Spectrum 24-bit card (2MB)... £389
G-Lock (PAL video genlock) £299
HC8+ SCSI controller.................. £129

Hard disks available from 52MB to 1GB

Co-processors

All maths co-processors include crystals.

20MHz.. £40
33MHz.. £69
40MHz.. £89
50MHz (PGA)............................ £154



Epson Scanners

The GT-6500 and GT-8000 24-bit colour flatbed scanners from Epson scan up to A4 in size, with output resolutions of up to 1200DPI on the GT-6500 and 1600DPI on the GT-8000 in colour or greyscale. The scanners include PowerScan or Image FX image software. (Image FX + PowerScan £100, only when you purchase a flatbed scanner)

Epson GT-6500 PowerScan £659
Epson GT-6500 Image FX £759
Epson GT-8000 PowerScan £1099
Epson GT-8000 Image FX.......... £1199
Document Feeder £399



PowerScan 4

Completely re-designed powerful user interface, produce 256 greyscale images (on a AGA machine), scan in 64 greyscales (non AGA Amiga can only display 16), add colour to greyscale images, special effects, new support for 18-bit scanner, add text to scans, available with mono or colour scanner. A1200/600 version available soon.

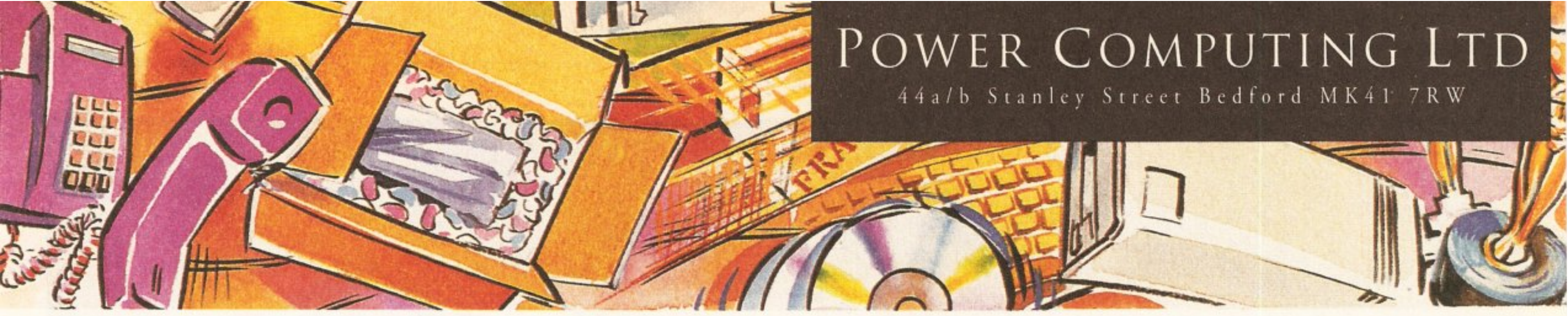
PowerScan 4 (Mono) £119
PowerScan 4 (Colour) £239
PowerScan 4 inc. OCR £159
PowerScan 4 upgrade interface £50
PowerScan 4 upgrade software........... £20
OCR Junior Software........................ £49
OCR Full version upgrade £49
(OCR full version only available to registered users of OCR Junior)

PowerScan IBM

For those who own an Amiga and IBM PC XT/AT it is now possible to use your PowerScan for both computers. The scanner includes 256 grey-scales, 100-400 DPI resolution, scan kit for Windows, OCR software and merge function for the quick and easy joining of two partial images.

IBM interface & software.......... £49.95

Goods are sold subject to our standard terms and conditions of sale and are available on request. Specifications and prices are subject to change without notice, and all trademarks are acknowledged. All Power Computing Ltd products come with a back to base 12 month



POWER COMPUTING LTD

44a/b Stanley Street Bedford MK41 7RW



Disk Expander

Disk Expander is an innovative program for all Amiga users. With this software solution you may double the capacity of your floppy disk or hard disk drives. The installation process takes only a few seconds and afterwards Disk Expander works invisible in the background. The compression ratios vary from 30% to 70%. The easy to use graphical interface guarantees that even the inexperienced user is able to use Disk Expander immediately without any problems. Disk Expander does not only expand the capacity of your hard disk drive, even floppy disks now have a storage space of approximately 1.5 megabytes. (Works with all drives including, SCSI, IDE, Floppies and even the RAD disk).

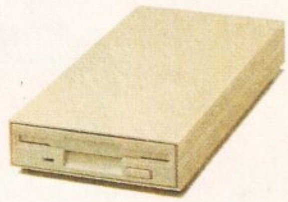
Disk Expander £35



Fargo Primera Printer

Now you can produce stunning, high quality output on paper, transparency film or even T-Shirt transfer from your Amiga. The Primera colour printer, recent recipient of countless awards in the IBM-PC and Macintosh markets is also the perfect companion to any Amiga. Primera uses wax thermal transfer technology, a technology usually associated with much higher priced printers. Some of the features include, software drivers for Amiga, PC and Macintosh, optional photo-realistic upgrade kit (dye sublimation) and monochrome ribbon cartridges available for text printing only.

Primera printer.......................... £825
Photo realistic upgrade kit £215.95
Photo realistic refill kit (100 prints)... £250
Photo realistic refill kit (25 prints) . £79.95
4 colour ribbon (80 prints).......... £38.95
3 colour ribbon (115 prints) £38.95
Monochrome ribbon (400 prints).. £31.95
Primera paper (A4 200 sheets) £18
T-Shirt transfer paper (A4 10 sheets) .. £17.95



XL Drive

The XL Drive can be used with any Amiga Computer, and allows you to store a massive 1.76MB on a high density floppy diskette. The drive can also act as a standard 880K drive and can read and write disks written on an A4000 internal high density drive. XL Drive requires Kickstart 2 or above.

XL Drive external.................. £89.95
XL Drive internal (all Amigas*)..... £79.95
XL Drive internal A4000 .... £89.95

PC880B Drive

The new updated PC880B is the most impressive disk drive of its kind on the market. The drive includes a strong aluminium casing, an anti-click device, virus blocker, Cyclone compatible chip and the latest built-in backup hardware which allows X-Copy to copy and verify. What's more you can now control these features through your mouse, so there are no more annoying switches to use.

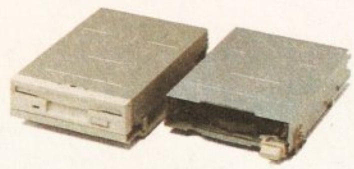
PC880B with Blitz Amiga................ £70
PC880B with Blitz & X-Copy.......... £80
PC880B 1.76MB Upgrade........ £49.95

Features	PC880B	Amitek
Anti-click	●	●
Anti-virus	●	●
Aluminium extrusion	●	
Sony mechanism	●	●
Isolation switch	●	●
Thru'port	●	●
Upgradable to 1.76MB	●	
Cyclone compatible chip	●	
Built-in backup hardware	●	
Mouse operated	●	

PC880E Drive

This drive is a high quality external floppy drive at a fraction of the price. As with all of our drives the PC880E has a thru'port, disabling switch and 12 month guarantee

PC880E Economy Drive.......... £49.95



Internal Drives

We use the same drive mechanisms as Commodore so that you get the kind of reassurance at a cheaper price than other internal drives on the market.

PC881 A500 Internal drive.............. £40
PC882 A2000 Internal drive £40

SCSI/IDE Drives

We can supply SCSI or IDE 3.5"/2.5" hard drives in many different sizes. Including cables and installation software.

80MB IDE 2.5" Internal £179
120MB IDE 2.5" Internal £229
170MB IDE 2.5" Internal £270
52QMB SCSI/IDE...................... £169
80MB SCSI/IDE........................ £179
160MB SCSI/IDE...................... £249
200MB SCSI/IDE...................... £349

Floptical Drive

The Floptical stores 20MB of data on a re-writable 3.5" disk. (A SCSI interface is required)

Floptical A2000 Kit £289
Floptical A500 Kit........................ £389
20MB Floptical Diskette £25



Syquest Drives

The new 3.5" removable hard disk from Syquest stores 105MB on each cartridge, with an accessing time of 17ms. An internal and external version is available. (A SCSI controller is required)

3.5" IDE Internal £499
3.5" IDE External....................... £579
3.5" SCSI Internal £539
3.5" SCSI External £599
3.5" 105MB Cartridge £79

Power Optical

128MB Optical Internal............... £779
128MB Optical External £879
128MB Optical Disk £40
SCSI Controller A2000 .... £129

Dual Drive

Our Dual Drive is packed with the many features of the PC880B whilst having two drives using only one port. This is another original from Power.

Dual Drive £125

X-Backup Pro

X-Backup Pro (Hardware designed by us) £29.95

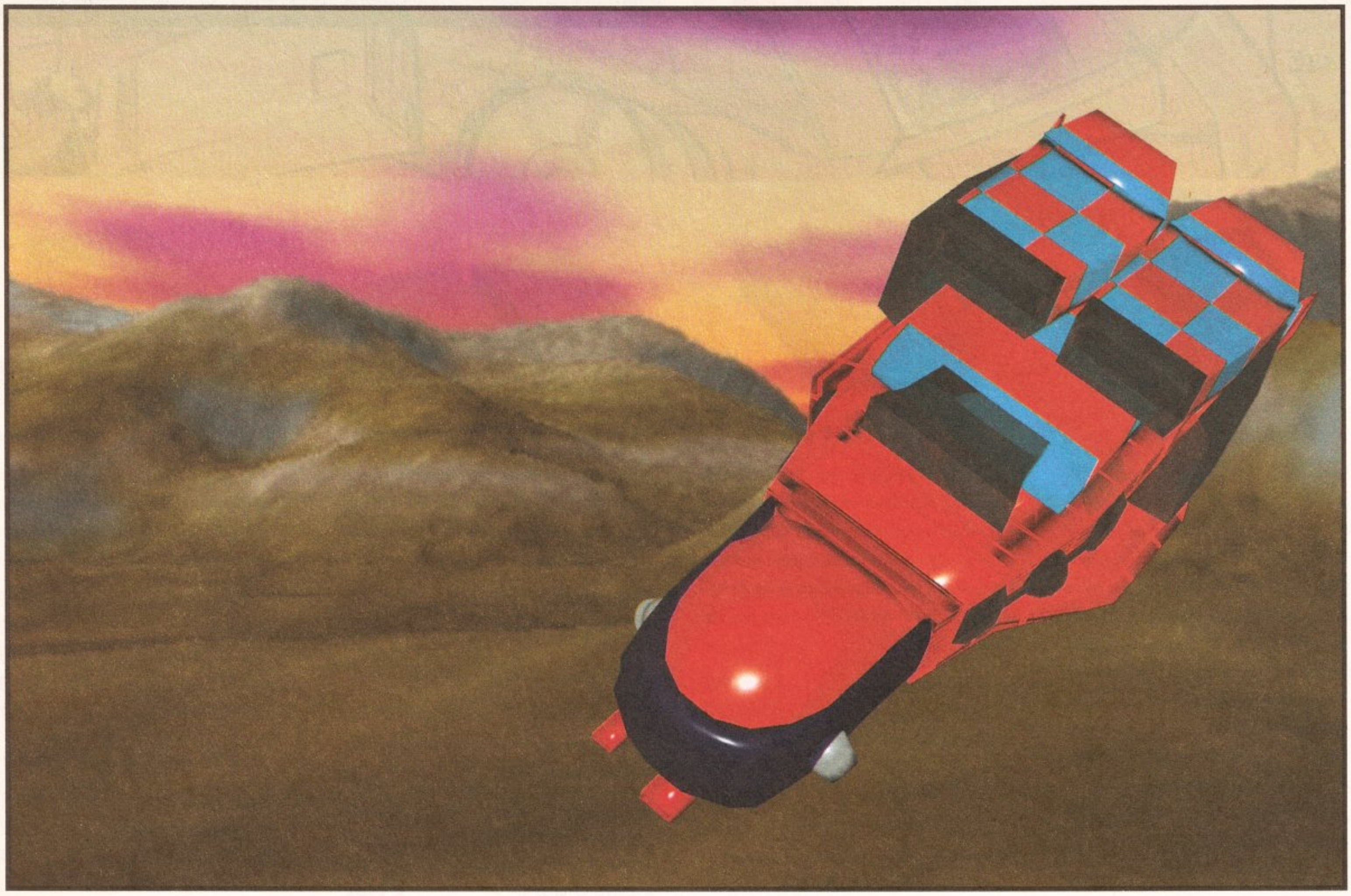
Order Form

Name ....
Address ....
....
Telephone No. ....
System Owned ....
Description ....
....
....
I enclose a cheque/PO for £ ....
Credit Card No. ....
Expiry Date ....
Signature ....

Delivery next day £5.00 2-3 days £2.50 Saturday £10.00 deliveries are subject to stock availability.
Please make cheques payable to Power Computing Ltd

*guarantee. Prices are valid for the month of publication only. E & OE. All prices include VAT. *Does not include the A4000*

TEL 0234 273000
FAX 0234 352207



You can do this!

Graham Sandiford explains in a step by step manner exactly how you too can render the stunning image shown above. So, get your renderer ready and unleash your creativity.

Over the last few years computer graphics have taken the TV and film industries by storm. Providing dazzling visual effects for a fraction of the cost of more conventional methods, they are here to stay.

Perhaps the most outstanding example of bringing computer graphics to the general public's attention is *Terminator 2*. More recently, you may have seen the *Babylon 5* science-fiction series. All of the external views of the spacestation the series is based on are created using Newtek's Amiga-based Video Toaster. The whole station is one huge 3 dimensional *LightWave* object (*LightWave* is the 3D modeller in the Video Toaster system).

Surely these kind of images are beyond the reach of the standard Amiga owner? Not at all – there is an excellent selection of 3D rendering packages for the Amiga. Due to the large number available, it can be hard to find a program to suit your needs. In the end, the quality of the image you create will depend on how well you can use a program's features, not just how many it has.

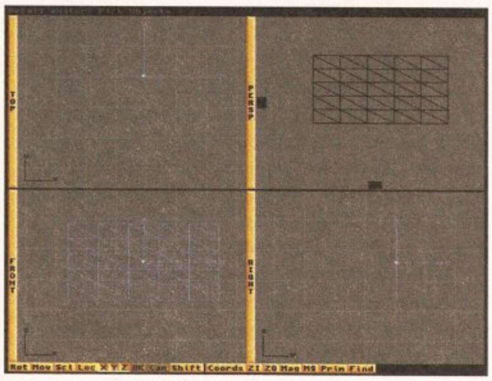
This is where this article comes in. We'll guide you through some of the key features of three of the most popular 3D programs. Many of you will have a copy of *Imagine 2* – it's been one of the most popular packages for a while. It was also given away as a coverdisk on issue 53 of *Amiga Format*. *Real 3D 2* is widely regarded as one of the best non-hardware reliant 3D programs available. We've also included *Caligari*, as it claims to have one the most intuitive interfaces around. It's also taken a huge fall in price. We're using the *Broadcast* version in this article, but many of the functions we'll discuss are also available in *Caligari 24*, which now costs under £100.

We'll be creating a relatively simple scene in *Imagine*, comprising a spaceship and a landscape. As taking you through this process step-by-step for all three packages would take up too many pages, we will concentrate on using *Imagine*. We'll try to use techniques common to all of them, but, where a program has a clear advantage over another we'll mention it.

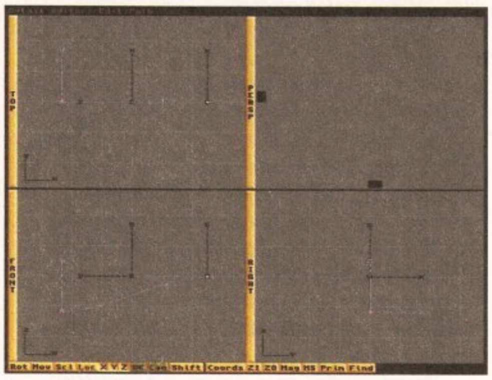
The main object that we are going to model is a large Chris Foss-like spaceship. I've been a fan of Chris Foss for some time, and his hulking style of ship lends itself to computer-based modelling techniques. A stripped-down model with a simple plastic attribute, which you can change if you want, has been included on this month's coverdisk. As raytracing is a memory-intensive task, you will need at least 2Mb of memory to make use of the object.

By the end of this article you should be very familiar with most of the modelling techniques employed by all three packages. You will also be able to make an informed choice as to which package would best suit your needs.

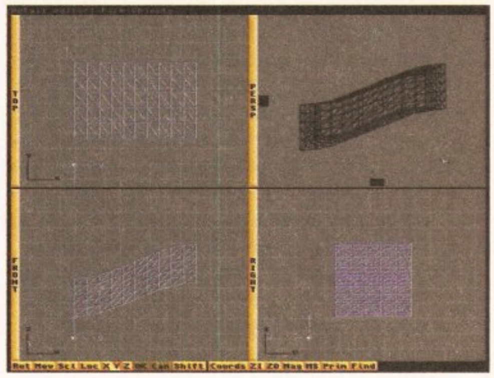
When you first load *Imagine*, you must pull down the **Project** menu, then select **New** and enter a name for your project. After this, switch to the **Detail Editor**. We will be performing most of our tasks in this editor, so take time out to try and familiarise yourself with some of the menus and buttons. It would also be worthwhile to experiment with different modes to find out how they operate.



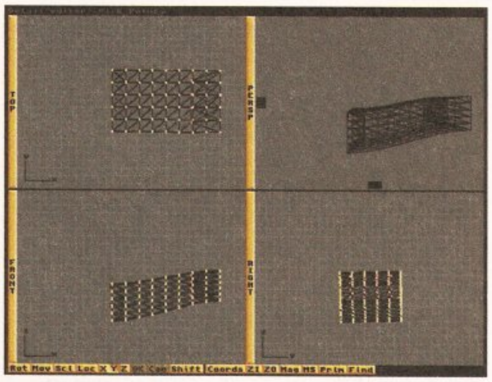
1.) The very first thing we will create will be a plane. To do this, click on the Prim button at the bottom of the screen and the Primitive requester will then pop up. Click on Plane and enter a value of 50 units for the height, 100 for the width and five for both of the horizontal and vertical sections. Click on OK. This will produce a flat rectangle that comprises 25 smaller rectangles.



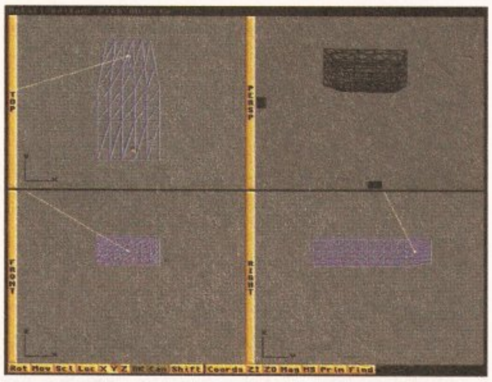
2.) Next, pull down Function/Add/Open Path. This will create an open path (paths are useful for animations as well as extrusions). Rotate the path by pressing <r> and moving your mouse downward. Pull down Modes/Edit Path. This mode will allow you to select either of the two nodes on each end of the path. Select one and enter move mode by clicking on the Mov button, or pressing <m> on your keyboard. Move the nodes until the path looks like a shallow letter S.



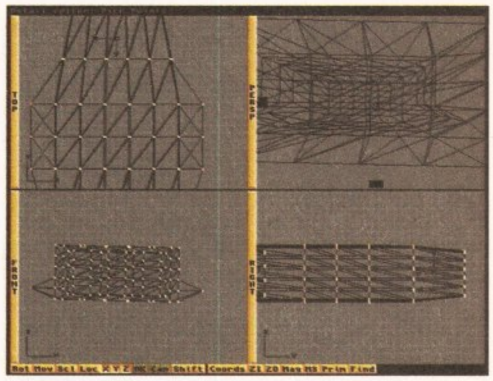
3.) Next select the plane. Press <r> to rotate it – its rotation is limited to the z axis, which is as we want it. Hold down the left mouse button while moving the mouse downward until the figure at the top-right corner reads -90. Press <right Amiga><e>, click on Extrude. Click on Along Path, specify ten sections, enter x and z scales of 0.75, select perform and the rectangle will be extruded along the s-shaped path.



4.) Select your extruded rectangle and pull down Object/Attributes and change the object's name from Plane to Engine left. Next click on load, select the Plastic attribute from your attributes folder and click on OK (you'll need to set the attributes for each object you create). Enter Pick Points mode and select all the points of one end (being sure to leave a one-point border) by holding down shift. Click on Mov and move the selected points inward along the engine's length, and then do exactly the same for the other end.



5.) Create another five by five sectioned plane. Rotate it by 90 degrees on its X axis (you'll need to press <x>), enter select points mode again and select the top most row of points, scale this row by clicking on the Scl button or pressing <s>, pull down on your mouse until the row looks as it does in this screenshot, then do the same for the second and bottom rows. Extrude this plane to a length of 100 with five sections and name it Hull.



6.) The hull we've created is a little featureless. We can add some more detail by selecting points, as shown above, and scaling them along the X axis only. This will produce a flared appearance. We can also duplicate the effect we used on the engine by repeating the very same selection and scaling operations. We can also add a panelled effect by using a bump map (we'll take a closer look at this technique later on).

JARGON BUSTING

Alpha Channel – a transparency effect that allows the placing of a foreground or background.
Behavioural Animation – each object in an animation is given set patterns of behaviour, such as movement, attraction or repulsion.
Boolean Operations – creates a new object by combining or cutting away intersecting parts of several objects.
Bump Map – translates the colour values of a file into the appearance of different elevations.
Collision Detection – the recognition of the collision of objects and application of realistic effects to them.
B-Spline – a method of connecting points with a smooth curve.
Extrude – to turn a 2D (flat) object into a 3D one by increasing its depth.
Gouraud Shading – a rendering method that smoothes out the differences in intensity of polygons.
Inverse Kinematics – calculates the positions of linked objects when one of them is moved.To take a simple example, a foot kicking a ball will in order move the ankle, shin, knee and finally the thigh.
Object – a 3D representation of a object consisting of several polygons.
Particle System – control of a group of particles, like leaves, with an external force such as wind.
Phong Shading – similar to **Gouraud Shading**, but works on pixels instead of polygons.
Polygon – mathematical description of a of shape with several sides.
Primitive – basically an extremely simple 3D object used as a 'building block' for more complicated ones.
Raytracing – a method of rendering that follows each theoretical ray of light through the 3D scene back to your eye.
Skeletonal Control – a method of controlling the movement of complicated objects by manipulating simplistic representations.

HOW THEY DO IT

All of the packages we will be dealing with are capable of producing stunning images. But, how do they do it? *Imagine* and *Real 3D* both use the popular and powerful method of raytracing, while *Caligari* relies on much simpler techniques. All of the techniques employed have advantages as well as disadvantages.

Raytracing is the technique that produces the most spectacular images and is often used to produce photo-realistic results. It attempts to emulate how our vision works in the real world. Our eyes register the light reflected from the surfaces of objects around us, and their surface properties in turn affect how they appear to our eyes. Among the factors that contribute to an objects appearance are its texture, shininess, opacity and so on. After taking the object's attributes into account, a **raytracing** package will trace every theoretical ray of light that has been bounced off an object and back to your eye.

Caligari relies on several methods for rendering. It uses **Flat**, **Gouraud**, **Phong**, **Environment** and **Metal** shading modes.

Flat is the simplest of the shaders – it just copies the polygon's transparency and colour to the screen. It doesn't include light sources in its calculations and, therefore, is of no use for viewing lighting effects. Nor is it suitable for producing final results, as they will appear very blocky. It is, however, excellent for gaining a quick preview of an object or animation.

Gouraud shading is another quick rendering method. One of the main differences between **Gouraud** and **Flat** shading is that **Gouraud** shading takes light into account, and both the object's ambient reflection and diffuse reflection. It also produces smoother results by calculating the colour for each object vertices, and interpolating the edges and insides of polygons among adjacent vertices.

Phong shading goes further in calculating light – it also includes **specular** light. **Specular** light is the light from each defined light source that is reflected from the surface to the viewer.

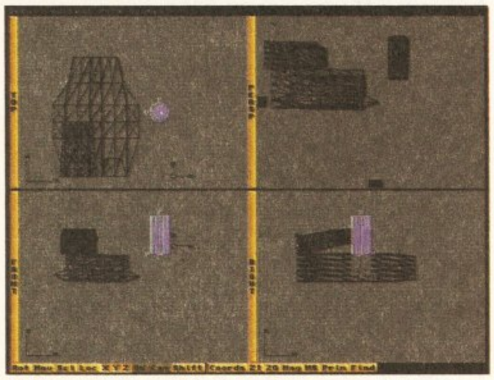
The **Environment** shader attempts to emulate highly reflective materials that reflect their environment, such as glass, mirrors and chrome.

The final rendering method is the **Metal** shader. The **Metal** shader also specialises in highly reflective surfaces. But, as metals do not simply reflect light, absorbing certain colours, depending on the object's colour, will make the reflections vary in colour. The colour of the reflection also depends on its angle. If the light is reflected at a sharp angle, it will take on more of the surface's colour. If it leaves at a shallow angle, it will be closer to the light source's colour.

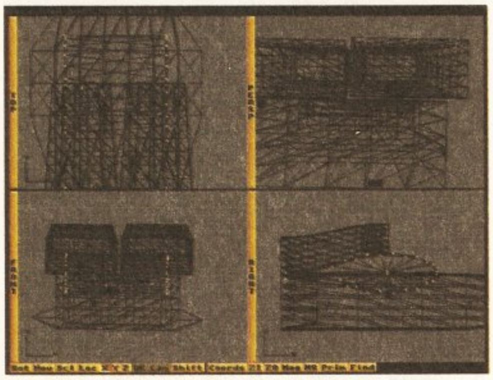
All the rendering methods mentioned have their advantages and disadvantages. **Raytracing** can produce stunning and unusual results. With *Real 3D*, which is a solid modeller, you can create lens shapes with glass-like attributes and then place it in front of the camera view, for example.

Two of **raytracing's** drawbacks are its complexity and huge rendering-time. Because of the number of options available and its closeness to the real world, you'll need to pay close attention to an object's attributes and the placement of light sources. This complexity means that scenes can take ages to render.

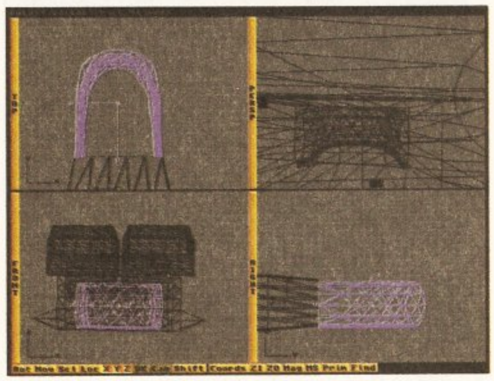
Caligari's methods are faster and require less knowledge of lighting and attributes. *Caligari's* renders don't trace every ray of light, and don't take as long as raytracing. It also means you don't have be too careful with your placement of lights. Having said that however, the results are not quite as spectacular as raytracing.



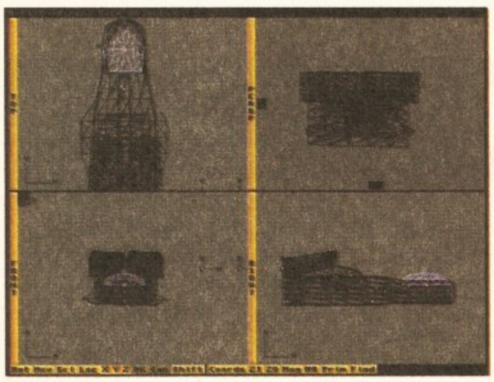
7.) Next we are going to make a support for the engines (at the moment there is only one) – we'll have to cut and paste it using right Amiga <c> and <p>. We will be using another primitive as the basis for the support, this time it will be a tube. Create a tube with a radius of 50 units, a height of 200, 24 circle sections, one vertical section, staggered points and a closed bottom and top.



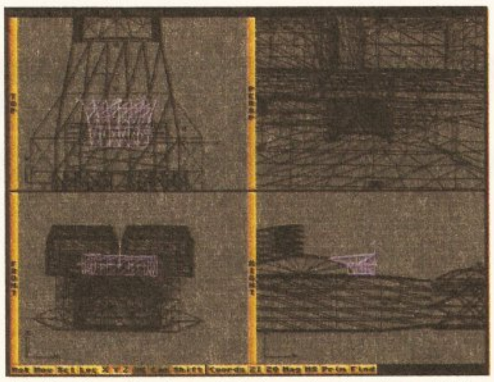
8.) We need to rotate the cylinder -90 degrees on its y axis. Then we need to pull down Mode/Pick Method/Drag Box. Enter pick points mode and, using the right-hand view, select a point by dragging the box around. Do this with each point, and move each one until the cylinder's profile fits the gap between hull and engines (you can leave the bottom half, as it is hidden inside the hull).



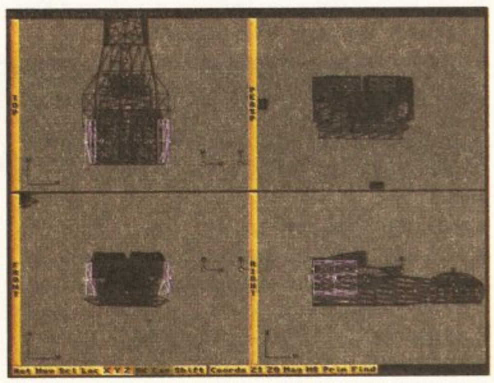
9.) Now for the prow. Create a torus with a ring radius of 100, tube radius of 20, 12 ring sections, six tube sections and staggered points. Enter select points mode (Drag Box and shift). Select one half of the torus, press <right Amiga><d> and the selected points will be deleted leaving a "U" shape. Drag individual points and scale groups of points until it looks like the grab above.



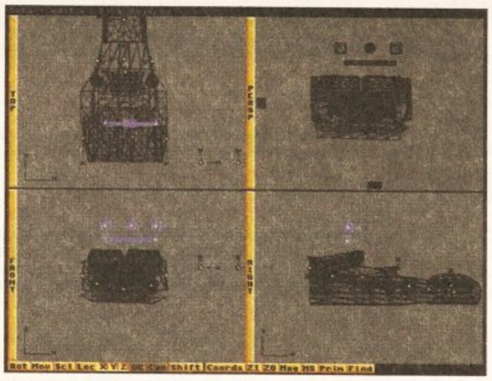
10.) Next, we will create the bridge or control centre. The bridge will be a simple hemisphere so we need another primitive, a sphere. The sphere should have a radius of 150, 12 verticle sections, six horizontal and staggered points. Once it is created we enter Points Select mode again, select the lower half of the sphere and delete those points. We'll also have to push and pull the points until the bridge fits snugly with the prow.



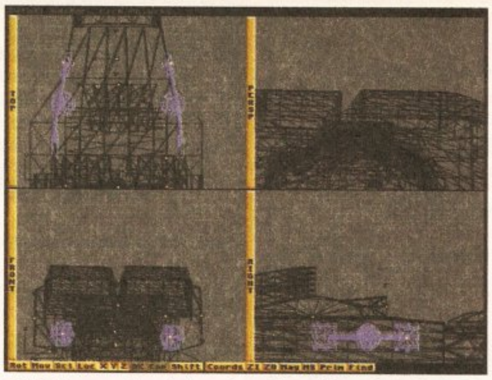
11.) Let's add a large intake valve to give a little extra detail to the ship's mid-section. First create a plane 150 units wide and 50 high with five horizontal sections and two vertical sections. Extrude the plane to a length of 100 units with about five sections, and set the z and x scaling to about 1.5. Select the second point up, and one in, on both sides of the widest end. Move them back along the intake's length.



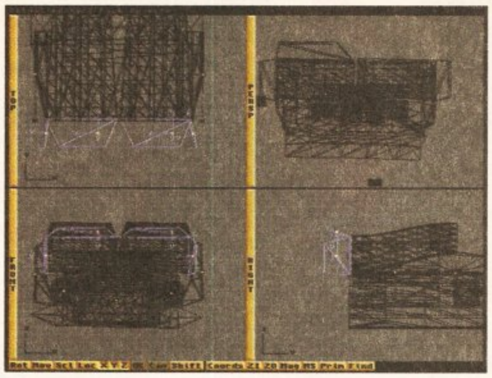
12.) For some more detail of the rear of the ship you can create some side plates that look like some form of intake valve. Create a plane again! This can be of whichever size you find pleasing. Give it five vertical sections and two horizontal sections. Cut and paste the plane, and then pull the top and bottom of each plane until they touch the hull or engine on either side of the ship.



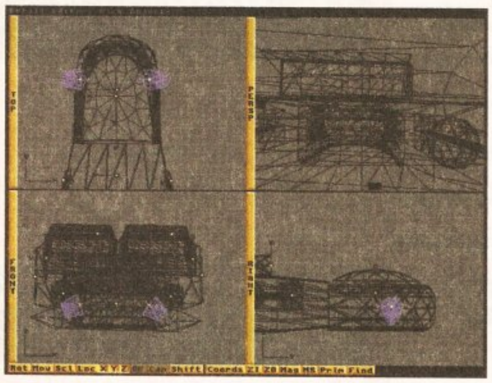
13.) Next, we'll make some fuel containers. First create a plane 50 units by 50 with one horizontal and one vertical section. Extrude this to 20 units with one section's z and x scale set to 0.75. Create a tube with a closed bottom and top, a radius of ten units, height of 250, 12 circle sections and three vertical sections. Create a sphere with a radius of 25, 12 circle sections and 6 vertical sections. Cut and paste the plane once.



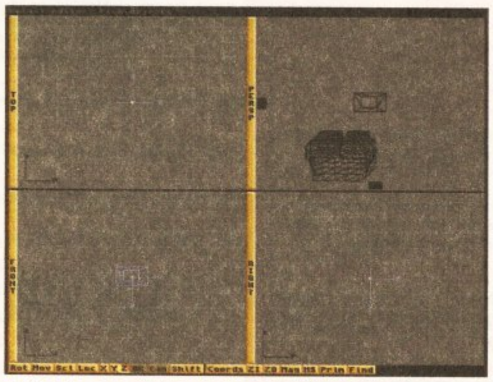
14.) Line up the tube along the side of the hull. To do this you'll need to be in Select Points mode and move the points in each section in order to match the curved shape of the hull. Once you've done this, align the sphere and two extruded planes with the tube. Join these objects by pressing <right Amiga><j>. The four objects have now become one and can be cut and paste for the other side of the hull.



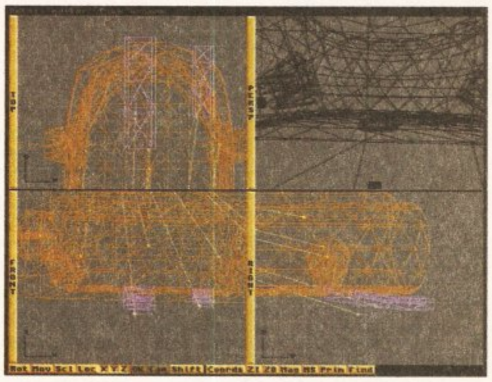
15.) The Editor decided it would be nice to add some flaps to the engine sections. These were very simple to model. Create a plane with one horizontal and one vertical section, about 150 units wide and 75 high. Once it has been created, scale one end so that it becomes narrower than the other. Extrude it to ten units and then cut and paste it three times. Rotate the copies until they appear as they do in the screenshot.



16.) In order to keep the ship looking stable, we'll add some thrusters to the front. The easiest way to create this object would be to create a cone with three vertical sections, delete its top point and pull the next section of points down towards the cone's base. Cut and paste it once, then angle them slightly so that they face the ground at a shallow angle, and attach them to the prow.



17.) To create the probes under the front of the prow, pull down Functions/Add/Axis to add an axis. Next select the axis, enter Add Lines mode, click four times to form a square, enter Drag Points mode and tidy up the square. Re-enter Add Lines mode and add a second square inside the first. Using Add Faces mode, add faces until you have what looks like a square doughnut.



18.) Extrude the square ring to 50 units and specify 3 sections. You now have a square tube – duplicate it and scale the copy down, position both at the front of the underside of the prow. To create a bottom, simply make a plane of ten by ten sections. Move and scale the plane until it covers the bottom. Raise the plane a little, select both objects, press <right Amiga><x>.

MODELLING TECHNIQUES

Computer generated 3D objects, of whatever shape, are all made of several polygons. The polygon is vector based, and can therefore be resized with no loss of detail. The level detail, or smoothness, of an object depends mainly on the number of polygons it is made of.

There are numerous ways to create a variety of objects. *Real 3D*, *Imagine* and *Caligari* possess a number of tools for the creation of simple and complex models. The tools are almost as diverse as they numerous. Even at the their most elemental level they employ different principals.



Basic techniques – extrusion and rotation.

Real 3D is a solid modeller. The objects it creates are solid, in much the same way as a child's block. It also has a large number of primitives. These are simple objects such as spheres, cubes etc. You can then use these "building blocks" to create more complex models. To aid you in this, *Real 3D* has some extensive **Boolean** operators. These make it possible to use objects as cutting tools which you can save for later use. *Real 3D* also uses **B-splines**. These can create very smooth and natural-looking objects as they are not polygon-based.

Imagine is a skin modeller. It creates objects that are hollow, or in other words only have a skin. You use a flat surface, like paper, and then manipulate it until it appears solid. Unfortunately, *Imagine* suffers from a lack of primitives, not even having a cube as a standard object. *Imagine* also has an extremely powerful **Forms editor** that can be used to create very organic-looking objects.

Like *Real 3D*, *Caligari* opts for solid modelling techniques. Although it lacks the power of *Real 3D's* **Boolean** operations, it does have an impressive free-form **deformation** function. In order to deform an object, it's enveloped in a 3D lattice. You can then push, pull, scale and generally deform it. All of the transformations you carry out on the lattice will automatically deform the object within.

THE BASICS

There are a few basic, but useful, techniques supported by all three programs for creating objects. These include **object extrusion** and **rotation**. If you have a flat surface you can extrude it and thereby give it extra thickness. If you create a profile of a roughly cylindrical object (a wine glass for example), you can then simply rotate it on its axis and end up with a complete 3D object. See the screenshot in this box for examples of these techniques.

VOTED BEST DEALER CU AMIGA JAN 93

FIRST COMPUTER CENTRE

OPEN 7 DAYS A WEEK

OPEN MON - SAT..................9.30AM-5.30PM
SUNDAY OPENING...........11.00AM-3.00PM
THURSDAY NIGHT LATE...9.30AM-7.30PM
MOST BANK HOLIDAYS..11.00AM TO 3.00PM

PREFERRED DEALERS FOR ACORN, CITIZEN, COMMODORE, DIGITA, PACE, PRIMA, SEGA, STAR ROMBO, SUPRA, US ROBOTICS

HOW TO ORDER

Order by telephone quoting your credit card number. If paying by cheque please make payable to the:
"FIRST COMPUTER CENTRE."
In any correspondence please quote a phone number & post code. Allow 5 working days for cheque clearance

- *Finance available!*

Please phone for details

- All prices include VAT
- All hardware/computers are UK spec.

UK MAINLAND DELIVERY TARIFFS
- Standard Delivery........................£1.25
- Guaranteed 2 to 3 day (week days) Delivery..£2.90
- Guaranteed Next Day (week days) Delivery..£4.95
- Open seven days a week
- 1200 sq. ft. showroom
- Free large car park
- Overseas orders welcome
- Educational orders welcome

FULL REPAIR SERVICE

We offer a FREE quotation on your computer or any peripheral (monitors, printers etc.). A delivery tariff of just £5.00 is charged or alternatively you can visit our showroom.

SALES & TECHNICAL

24 HOUR MAIL ORDER SERVICE
6 LINES!

0532 319444

FAX: 0532 319191

FOR DESPATCH & RETURNS ENQUIRES TEL. 0532 319444

SHOWROOM ADDRESS:
DEPT. AS, UNIT 3, ARMLEY PARK COURT, OFF CECIL ST, STANNINGLEY ROAD, LEEDS, LS12 2AE.

(Follow A647 signs from Leeds City Centre)

It is recommended that prices are confirmed before ordering goods E&OE.

AMERICAN EXPRESS SWITCH Access MasterCard VISA EUROCARD

2% surcharge on AMEX

FIRST COMPUTER CENTRE (LEEDS) Tel: 0532 319444

The *AMIGA* A1200 RACE & CHASE PACK

with Nigel Mansell F1 and Trolls!

only £289.99!

A1200 DESKTOP DYNAMITE PACK

with Wordworth 2 AGA, Print Manager, DP4 AGA, Dennis and Oscar

only £339.99

HARD DRIVE VERSIONS

	R&P pack	D/D pack
64Mb	£439.99	£489.99
85Mb	£489.99	£537.99
127Mb	£519.99	£564.99
209Mb	£589.99	£629.99

THE CHAOS PACK!

- CHAOS ENGINE
- NICK FALDO CHAMPIONSHIP GOLF
- PINBALL FANTASIES
- SYNDICATE

only £29.99 or £19.99 with any AMIGA!

The *AMIGA* 4000

A4000/030, 80 Mb HD...........£1037.99
A4000/030,130 Mb HD...........£1099.99
A4000/030,250 Mb HD*...........£1159.99
A4000/030,340 Mb HD*...........£1239.99
A4000/030,420 Mb HD*...........£1339.99
A4000/040,130 Mb HD...........£1879.99
A4000/040,250 Mb HD*...........£1949.99
A4000/040,340 Mb HD*...........£2029.99
A4000/040,420 Mb HD*...........£2149.99

Price Rises Imminent on the A4000 range!
All the above examples come with 6 Mb of RAM as Standard
*The hard drive only is not covered by on site warranty

All Amiga's come with Workbench, mouse & 12 month warranty. The A1200 & A4000 come with 12 months on site warranty All 1200's also come with a built in integral hard disk option.

A600 & 1200's HD kits

20Mb.......*£89.99 60Mb....*£179.99
120Mb...*£219.99 80Mb....*£185.99
210Mb...*£349.99 *Just Add £10.00 for fitting
3.5" H/drive upgrade kit no HD only £22.99

PRIMA A1200 REAL TIME CLOCK

Date and time stamp your files. Fits directly onto the motherboard with no soldering.

check for compatibility only £12.99!

CD ROM Drives

Internal SCSI CD-ROM drives for the A1500/2000/4000 (with suitable SCSI interface). All drives include driver software and will read both CDTV/CD32 & PC ISO 9600 standard disks. External kits for A3000 also available

TEAC CD-50 Internal drive only
- 265Ms Access time
- 355KB transfer rate

£339.99

TOSHIBA XM3401 Internal
- 200Ms Access time
- 330KB transfer rate

£321.99

TOSHIBA XM4101
- 385Ms Access time
- 300KB transfer rate

Internal.£219.99 External.£314.99

GVP A4008 SCSI controller..£122.99

AMIGA CD32 4 Game PACK

based on the 68020, the CD32 features AA chip set, A4 size footprint, 2Mb RAM, 128K flash memory, built in WB & the ability to play normal audio CD's
inc Oscar, Wing Commander, Dangerous Street & Digger

only £279.99

Full Motion Video Module

Transforms the standard CD-32 into a powerful multimedia unit £193.99

CD32 Software

Fire Force...................£24.99 Seek & Destroy.£21.99
Psycho Killer.............£24.99 Liberation.........£28.99
Town with no Name.£24.99 Castles 2.............£24.99
7 Gates of Jambala....£21.99 Deep Core.........£21.99
Chambers of Shaolin.£21.99 Trolls...................£24.99
Laberynth of Time....£21.99 Sensible Soccer.£21.99
Dangerous Streets....£24.99 Pirates Gold.......£24.99
Whales Voyage.........£24.99 Alfred Chicken.£24.99

CD Rom Amiga A570

Turns your Amiga 500 into a CDTV. Includes Fred Fish CDPD disk & Sim City

now only £98.99!

PRINTERS

All our printers come with ribbon/toner, printer drivers (if available), paper & cables!!

Canon

Canon BJ10sx...............£198.99
Laser quality output. Large buffer
Canon BJ200.................£269.99
3 page a min speed, 360 dpi, small footprint & 80 page sheetfeeder
Canon BJ230.................£364.99
wide carriage version of above
Canon BJ300.................£419.99
Desktop bubble jet with laser quality
Canon BJ330.................£464.99
Wide carriage version of the BJ300
Canon BJC600 Colour...£538.99
new bubble jet from Canon
BJ10 Autosheetfeeder....£49.99

CITIZEN

COMPUTER PRINTERS

Citizen printers have a 2 year guarantee

New! ABC Colour printer.£173.99
simple (as easy as ABC) to use 24 pin printer. Comes as standard with 50 sheet Auto sheet feeder. Tractor feed optional at £27.99
only £150.99 if bought without the colour option
Swift 90 Colour.................£156.99
Excellent value 9 pin colour. Highly recommended
Swift 200 Colour...............£289.99
Same out put as the 240 but with less facilities
Swift 240 Colour...........£226.99
24 pin, 240cps draft, 10 fonts, quiet mode, 240cps.
Projet II..........................£254.99
new inkjet printer with built in auto sheet feeder
Swift Auto Sheet feeder.£79.99

HEWLETT PACKARD

HP Deskjet Portable.....£223.99
HP510 mono................£249.99
HP 500 Colour..............£309.99
HP 550 Colour..............£443.99
4 times faster than the HP500C!!
All HP printers come with a 3 year warranty

star

COMPUTER PRINTERS

Star LC100 colour........£139.99
9 pin colour, 8 fonts, 180 cps draft, 45 cps NLQ
Star LC200 colour........£187.99
9 pin colour, 8 fonts, 225 cps draft, 45 cps NLQ, A4 landscape printing.
NEW! Star LC24-30 Col....£222.99
NEW! Star LC24-300 Col..£289.99
24 pin quality, 210 cps draft, 67 cps LQ, 39K buffer expandible to 48K, 10 fonts and quiet mode.
Star LC24-200 colour...£263.99
Colour version with 30K buffer expandable to 62K
Star SJ48 Bubble jet......£215.99
Laser quality, ultra quiet, Epson compatible & portable
NEW! Star SJ144 Colour Thermal
Stunning affordable colour printer. 3 PPM, low running costs
only £439.99
Star SJ48 Autosheet feeder..£49.99

PRINTER CONSUMABLES

Ribbons

Citizen Swift mono ribbon..........£4.99
Citizen Swift Colour ribbon..........£13.99
Star LC100 mono..........£3.69
Star LC200 mono..........£4.99
Star LC100 colour..........£7.99
Star LC200 colour..........£12.99
Star LC24-30 mono..........£8.99
Star LC24-30/200 Colour..........£11.99
Re-Ink Spray for mono ribbons..........£11.99

COVERS

Star LC10/20 cover..........£4.99
Citizen Swift/ABC..........£5.99
HP 500/550/510..........£5.99
Star LC100/200..........£5.99
Star LC24-300/30..........£5.99

PAPER

prices apply only when ordered with printer or purchased direct from the showroom

Fanfold (tractor feed)..........500 sheets...£4.99
Fanfold (tractor feed)........1000 sheets...£8.99
Fanfold (tractor feed)........2000 sheets.£17.99
Single sheet..........................500 sheets...£4.99
Single sheet........................1000 sheets...£8.99
Single sheet........................2000 sheets.£17.99
Delivery for 2000 sheets £5.00 when purchased without printer

SUPRA MODEMS

The Supra-Fax 144LC V.32 bis (14400 baud!)
Low cost version of the classic V32Bis Fax modem. Features as below but class 1 fax only and LED display
only £159.99

The Supra-Fax Modem V.32 bis
This modem has full 14400 baud. includes V.32bis, V.32, V.22bis, V22, V21, MNP2-5, V.42, V42bis, Class 1 & 2 commands, 9600/14400 Group 3 Fax. Includes free modem comms (not Fax)s/w & cable
only £209.99

Supra Fax Plus.....................£119.99
Even faster than the standard 2400 from Supra with auto dial & auto receive. 9600 bps Hayes comp. V22Bis, V42 Bis, MNP 2-5 & auto adjust to maximise transmission speeds. Includes free modem comms (not Fax) s/w & cable.

Supra 2400.......................£64.99
Get on line using this great value fast modem with auto dial & receive. 2400 baud Hayes comp, V22 BIS. Includes free modem comms s/w & cable!!

All Supra Modems come with a 5 year warranty

US ROBOTICS

WE ARE PREFERRED USR DEALERS

Sportster 2496+FAX...............£145.99
Sportster 14400 FAX...............£243.99
WorldPort 14400+FAX...........£251.99
Courier HST (16.8)...................£469.99
Courier V32bis Terbo+FAX....£449.99
Courier HST/Dual 16.8 Fax.......£486.99
Courier HST/Dual 16.8 Terbo Fax....£556.99

If you thought V32bis was fast try the terbo! They come with a 5 year warranty *& are BABT Approved!*

PACE MODEMS

MicroLin V22b FAX.....£175.99
MicroLin V32b FAX.....£274.99
5 year warranty *and FULLY BABT Approved!!*

MONITORS

All our monitors are UK spec. All monitors come complete with a free Amiga lead*

Sharp TV/Monitor £189.99
includes remote control
Commodore 1084S £199.99
medium resolution colour monitor
Commodore 1940 £284.99
Dualsync, .39 dpi
Commodore 1942 £349.99
Dualsync, .28 dpi
Microvitec 14" Multisync
1 year warranty £399.99
*free cable for A4000 only. A1200 cable £6.99 extra
Sonica Colour £194.99
similar to the Philips 8833 mark 2 monitor

PREMIER Ink Cartridge Refills

save a fortune in running costs with your ink/bubble jet. Compatible for the HP500/550, Deskjet Plus, Canon BJ10/20/80/130/200/300/330, Star SJ48, Citizen Projet and many others. Full range of colours available

single refills (22ml)..........£6.99
Twin refills (44ml)..........£12.99
Three colour kit (66ml)..........£19.99
Full colour kit (88ml)..........£27.99
Bulk refills (125ml)..........£24.99

Cartridges

Canon BJ10 cartridge..........£18.99
Double life 500 cartridges..........£24.99
HP550/500 Colour cartridge..........£24.99
Star SJ48 cartridge..........£18.99
Star SJ144 cartridge (pack of 3)..........£42.99
Star SJ144 mono cartridges (3 pack)...£16.99
Star SJ144 colour cartridges (3 pack)..£16.99

Miscellaneous

Printer Switch Box 2 way..........£12.99
Printer Switch Box 3 way..........£17.99
Printer Stands (Universal)..........£7.99
3 Metre printer cable..........£6.99
5 Metre printer cable..........£8.99
10 metre printer cable..........£12.99

PRIMA A500 & A600 RAM

3 YEAR WARRANTY!!

	A500P	A600
Unpopulated	only £16.99	£23.99
Populated to 512K	only £19.99	£28.99
Populated to 1 Mb	only £28.99	£33.99

- 2 Mb A600 OR A1200 RAM card.......£114.99
- 4 Mb A600 OR A1200 RAM card.£169.99

AMIGA A500 512K RAM by PRIMA for the original 1.2/1.3 AMIGA..only £13.99

32 BIT RAM (for A4000 etc)

- 1 Mb SIMM..........................£39.99
- 2 Mb SIMM..........................£79.99
- 4 Mb SIMM..........................£154.99
- 8 Mb SIMM (only for Microbotics)£309.99

RAM & CUSTOM CHIPS

SPEED	PLCC	PGA
20 Mhz	£38.99	£38.99
33 Mhz	£74.99	£74.99
40 Mhz	£106.99	£106.99
50 Mhz	N/A	£137.99

- 1 mb by 8/9 SIMMS (1 Mb).......£34.99
- 4 Mb by 9 SIMMS (4 Mb)..........£144.99
- 1 Mb by 4 DRAMS(1 Mb)..............£42.99
- 1 Mb by 4 ZIPS(1 Mb)....................£39.99
- 256 by 4 DRAM (DILs)...........(each) £5.49
- Kickstart 1.3................................£17.99
- Kickstart 2.04...............................£24.99
- Kickstart 2.05 (for use in A600)...£24.99
- Fatter Agnes 8372A.......................£25.99
- Super Denise..................................£16.99
- 6571-0326 Keyboard controller.£13.99
- CIA 8520A I/O controller.............£7.99

AMIGA 1200 RAM

The HAWK CO-PROCESSOR & RAM

Realise the full potential of your A1200 with this trapdoor expansion. inc real time clock

- 1 MB RAM.........................£94.99
- 2 MB RAM.........................£124.99
- 4 MB RAM.........................£194.99
- 8 MB RAM.........................£389.99
- 1 MB & 20 MHZ CO PRO....£144.99
- 2 MB & 33 MHZ CO PRO....£194.99
- 4 MB & 40 MHZ CO PRO....£289.99
- 8 MB & 40 MHZ CO PRO....£489.99

FULL 2 YEAR WARRANTY

SUPRA A500 RAM

Simply the best! Fits onto the side expansion port Auto configures with no software patching.

- 8Mb pop to 2 Mb.........................£159.99
- 8Mb pop to 4 Mb.........................£214.99
- 8Mb pop to 8 Mb.........................£319.99
- 8Mb pop to 2 Mb for 2000/1500 range..£149.99

GVP GVP PRODUCTS

A500 products

- HD8+/0Mb drive..................................£127.99
- HD8+/42Mb drive................................£197.99
- HD8+/120Mb drive..............................£297.99
- PC286 Emulator for HD8+/A530............£94.99

A1200 Products

- 33 Mhz 68882 for A1200 SCSI/RAM.....£77.99
- External SCSI kit SCSI/RAM....................£47.99

NEW! A1230 MK II Accelerator Board

This new, improved board has all the same features as before, but with a DMA port allowing extra options (eg SCSI-II) to be added later.

- 40MHz 680EC30, 0MB RAM, No FPU..£244.99
- 40MHz 680EC30, 4MB RAM, 40MHz FPU.....£544.99
- 50MHz 68030, 0MB RAM, No FPU........£374.99
- Other configuratons available ....£POA

A1500/2000/4000 Products

similar to the old HD8 series

- 4008+/42Mb hard drive.........................£197.99
- 4008+/80Mb hard drive.........................£297.99
- 4008+/120Mb hard drive.......................£397.99

Miscellaneous Hardware

- Overdrive 35 External hard drive case..........................£139.99
- XDS Dataflex External Hard drive controller..........................£64.99
- DKB Mega Chip II (2Mb chip RAM)..£169.99
- DKB 1202 A1200 RAM board......£84.99

takes 2 32 bit SIMMs. Has an optional FPU. See above for prices

SPECIAL OFFERS!

- Directory Opus 4..................................£45.99
- Distant Suns 4.2..................................£38.99
- Kindwords 3..£24.99
- Make Path for Vista.............................£25.99
- Maxiplan 4 spreadsheet.......................£24.99
- Scala 1.13...£49.99
- Pagestream 2.2 DTP............................£64.99
- XCopy Pro plus hardware.....................£25.99
- Technosound Turbo.............................£18.99
- Technosound Turbo 2..........................£27.99
- Terraform...£25.99
- Vista Pro 3...£45.99

♦

- Fujitsu Breeze 100 Incjet £145.00
- Fujitsu Breeze 200 Incjet £200.00

♦

ROCHARD DRIVES for the A500/A500+ from £179.99 (40Mb)

GVP HC8+ from £199.99

♦

Mega Lo Sound.........................£25.99

SCANNERS

Power Scanner V4 £119.99

With the latest version 3 s/w for bright & sharp grey scale performance. Flexible scanned image display manipulation options, plus Clean up, embolden, resize & flip.

Colour version only £239.99

EPSON GT6500 Colour Flatbed only £587.50

phone for details & demo

Art Department Pro Scanner S/W..£109.99

compatible with Epson ES300C, ES600C, ES800C, GT6000, GT6500 & GT8000

MICE & TRACKERBALLS

- Alpha Data Mega Mouse 90% rating. 290 Dpi..£12.99 or £14.99 for 400 Dpi version
- DATALUX CLEAR MOUSE High quality clear 2 button mouse............£19.99
- Zydec Trackball..............£29.99
- Golden Image Trackball..£37.99

DISK DRIVES

NEW! Golden Image drive with LCD track display....only £49.99

NEW! AMITEC 1 mb 3.5" drive

Features Anti Click, Anti Virus, Sony Mech, 2 year warranty..........................only £58.99

Cumana 3.5"...........only £56.99

1 meg external drive. The best name in disc drives

- A600/1200 internal drive............£53.99
- A500 internal drive....................£49.99
- A4000 internal drive...................£99.99

OPALVISION

24 bit graphics card & video system for the 1500 2000/3000/4000. Includes software bundle

only £509.99 with Imagine 2!

PICASSO II

New generation retargetable graphics has arrived with this true 24 bit graphics board for the A2000/3000/4000.

- 1Mb version.........................£299.99
- 2Mb version.........................£335.99

GENLOCKS

- Hama 292....................£259.99
- Hama 290....................£429.99
- GVP Genlock.........only £297.99

features professional SVHS output

Rocgen Plus..........only £149.99

Includes dual control for overlay and keyhole effects, extra RGB pass thru. Now A1200 compatible!

Rendale 8802 FMC..only £169.99

Rocgen Rockey.........only £149.99

For creating special effects in video production with genlocks

PRIMA ROM SHARERS

This high quality ROM sharer features a flexible ribbon connection so that it can be positioned anywhere within your A500 Plus or A600. Full 2 year replacement warranty

now only £19.99 or £27.99 for keyboard switchable version

ROMBO PRODUCTS

VIDI 12 Real Time £134.99

Real time colour digitizing from any video source. Full AGA support

VIDI 24 Real Time £223.99

24 bit quality real time colour digitizing from any video source. Full AGA support

VIDI 12 AGA £70.99

Full support for AGA chipset. Colour images captured in less than a second, mono images in real time with any video source. Multitasking s/w, cut & paste.

VIDI 12 SOUND & VISION AGA

with built in MegamixMaster £98.99

TAKE 2 £35.99

Features include load and save from D. Paint animations and IFF files. Supports HAM graphics.

Megamix Master........£26.99

8 bit, high spec. sampler. Special effects include echo that can be added in real time, fully multitasking & easy to use.

ACCELERATORS

MICROBOTICS

New M1230 for A1200 withup to 128 Mb fast RAM!

- M1230 XA 33Mhz, 0Mb............£245.99
- M1230 XA 40Mhz, 0Mb............£264.99
- M1230 XA 50Mhz, 0Mb............£329.99

See "RAM & CUSTOM CHIPS" section for prices on Co-pro's and 32 bit RAM. Call for prices on upgrades from MBX1200Z to MBX1230XA

GVP

- A1230/0Mb RAM for A1200..only £284.99
- A1230/1Mb RAM for A1200..only £384.99
- 6882 Co Pro for A530..............only £129.99
- 1500/2000 G-FORCE 030-25MHz with 4Mb 32 bit RAM...........................only £479.99
- G-Force 030-40MHz with 4Mb 32 bit RAM only £729.99

NEW! SUPRA ACCELERATOR for the A500/A500+& A1500/2000

28 Mhz, uses A500 side port so there is no internal fitting

only £129.99!

ACCESSORIES

- Real Time A1200 internal clock module....only £12.99
- Mouse/joystick manual port switcher........only £13.99
- Computer Video Scart Switch...................only £19.99

2/3/4 way Parallel port sharers £POA

Amiga Sound Enhancer Plus by Omega Projects. Hear the Amiga's sound like you've never heard it before! £36.99

- QUALITY MOUSE MATS...............................£3.99
- 10 CAPACITY DISK BOX..............................£0.99
- 20 CAPACITY DISK BOX..............................£2.99
- 40 CAP LOCKABLE DISK BOX.....................£3.99
- 100 CAP LOCKABLE DISK BOX..................£5.49
- *90 CAP STACKABLE BANX BOX..............£9.99
- *150 CAP STACKABLE POSSO BOX........£17.99

*add £3.00 delivery if purchasing just one Posso or Banx box. Normal delivery when purchased with other product or when buying 2 or more.

- AMIGA A500 DUST COVER.........................£3.99
- AMIGA 600 COVER.....................................£2.99
- 14" MONITOR DUSTCOVER.......................£6.99
- 12" MONITOR DUSTCOVER.......................£5.99
- AMIGA TO SCART CABLES........................£9.99
- STD 1.8 METRE AMIGA PRINTER LEAD....£4.99
- MODEM AND NULL MODEM CABLES......£9.99

AMIGA CONTROL STATIONS

- A500 or 1200 VERSION.................................£36.99
- A600 VERSION..£29.99

DISKS

All disks are 100% error free guaranteed

New High density 3.5 inch bulk and branded

Please phone for best prices!

QTY	Bulk DS/DD	Branded DS/DD
10	£4.49	£5.49
30	£12.99	£14.99
50	£20.99	£22.99
100	£37.99	£42.99
200	£69.99	£79.99
500	£168.99	£190.99
1000	£324.99	£365.99

Branded disks come complete with labels

- Disk Labels....500..........................£6.99
- Disk Labels..1000..........................£9.99

SOFTWARE

BUSINESS

- Gold Disk Office U.K.spec..............................£45.99
- Maxi Plan 4...£24.99
- Mini Office..£38.99
- Money Matters....................................£35.99

MISCELLANEOUS

- Distant Suns 4.2..................................£38.99
- GB Route Plus......................................£45.99
- XCAD 2000..£97.99
- XCAD 3000..£289.99

MUSIC/SOUND

- Audio Engineer Plus V2.......................£168.99
- Clarity 16 sampler...............................£105.99
- Deluxe Music Construction Set v2.........£59.99
- Pro Midi Interface by Microdeal.............£24.99
- Stereo Master......................................£29.99
- Techno Sound Turbo.............................£18.99
- Techno Sound Turbo 2..........................£25.99
- Trap Fax professional fax s?w...............£74.99

PROGRAMMING

- Amos Creator.......................................£34.99
- Amos Compiler.....................................£21.99
- Amos 3D..£25.99
- Amos Professional................................£47.99
- Amos Professional Compiler.................£24.99
- Bliz Basic 2..£53.99
- Devpac 3..£50.99
- Easy AMOS...£24.99
- Lattice C Language Version..................£229.99

PUBLIC DOMAIN *Top 30* from £1.50! *(many more titles available)*

- 9 Fingers Rave Demo.............(PDA030) 2 disk.£2.25
- Fit Chix2.................................(PDA034) 1 disk.£1.50
- Magic Workbench....................(PDA017) 1 disk.£1.50
- State of the Art.......................(PDA024) 1 disk.£1.50
- Edword Pro V4........................(PDA005) 1 disk.£1.50
- Disk Salv v 2.0........................(PDA003) 1 disk.£1.50
- PC Task...................................(PDA019) 1 disk.£1.50
- TRSI Misery Demo...................(PDA029) 1 disk.£1.50
- Suicide Man II.........................(PDA035) 1 disk.£1.50
- Mean CD Machine....................(PDA036) 1 disk.£1.50
- Mindwarp AGA Demo..............(PDA015) 1 disk.£1.50
- Motorola invaders AGA...........(PDA017) 1 disk.£1.50
- Easy Calc Plus.........................(PDA006) 1 disk.£1.50
- Revelations.............................(PDA020) 1 disk.£1.50
- Mr Men Olympics....................(PDA026) 2 disk.£2.25
- Road to Hell............................(PDA032) 1 disk.£1.50
- Point of Sale Demo 1200 only.(PDA018) 1 disk.£1.50
- Kefrans Desert Dreams...........(PDA012) 2 disk.£2.25
- Klondyke AGA.........................(PDA013) 3 disk.£2.75
- Ami Base Pro V1.8...................(PDA033) 1 disk.£1.50
- Last Stand in Hoth..................(PDA014) 4 disk.£3.50
- Ami Base Pro v 1.8..................(PDA001) 1 disk.£1.50
- Suicide Man.............................(PDA037) 1 disk.£1.50
- Fairlight Vertual Dreams........(PDA008) 1 disk.£1.50
- Starbase 13.............................(PDA025) 2 disk.£2.25
- Grapevine 17...........................(PDA009) 3 disk.£2.75
- Spectrum Emulator version 1.7..(PDA027) 1 disk.£1.50
- Spectrum Games Disk............(PDA028) 1 disk.£1.50
- The Mini AGA..........................(PDA038) 1 disk.£1.50
- RD Prep..................................(PDA022) 1 disk.£1.50
- Reorg V3.1..............................(PDA023) 1 disk.£1.50
- CD32 Review...........................(PDA039) 1 disk.£1.50
- CLI /Shell Help........................(PDA002) 1 disk.£1.50
- Text Engine v4.1.....................(PDA031) 1 disk.£1.50

UTILITIES

- Ami...£44.99
- Amiback Tools.....................................£39.99
- Amiback Plus Tools Bundle..................£74.99
- AMIGA Release 2.1 software upgrade....£49.99
- Cross Dos V5..£36.99
- Directory Opus 4...................................£45.99
- GP FAX 2.3 software.............................£49.99
- Giga Mem...£51.99
- Quartback V6 *NEW!*.............................£52.99

Latest version of this Fast & Famous hard disk backup utility.

- Prima A600/1200 Hard Drive setup software. This is the best setup software on the market................£5.99
- Quarterback Tools.................................£54.99
- Quarterback Tools Deluxe.....................£64.99
- Xcopy Pro inc. hardware.......................£25.99

VIDEO AND GRAPHICS

- 37 Compugraphic fonts Vol 1, 2, or 3 by GT..........£9.99
- Adorage...£67.99
- Art Department Pro 2.3.......................£145.99
- Art Department Scanner software........£114.99
- Brilliance Pro. paint and animation......£119.99
- Caligari 24 3D Design and animation....£94.99
- Deluxe Paint 3......................................£12.99
- Deluxe Paint 4 AGA..............................£69.99
- Image Master RT..................................£149.99
- Make Path for Vista...............................£25.99
- Morph Plus...£147.99
- Morphus by Impulse for Imagine..........£59.99
- Pixel 3D Pro *NEW!*................................£99.99
- Real 3D Classic.....................................£77.99
- Real 3D V2...£389.99
- Scala 1.13...£49.99
- Scenary Animator V4 (3Mb reqired).....£49.99
- Terraform...£25.99
- Video Director......................................£115.99
- Video Master..£49.99
- Vista Pro 3 (4Mb required)....................£45.99

WORD PROCESSING/DTP

- Final Copy 2 *(UK) Release 2*...........................only £66.99

built in outline fonts, full graphics import (IFF and HAM), UK thesaurus, spelling checker & much more.

- Final Writer DTP *NEW!*..........................£99.99
- Kindwords V3.......................................£24.99
- Penpal 1.4..£29.99

Best selling feature packed word publisher with database

- Pagestream 2.2 U.K. version.................£64.99
- Pagestream 3 U.K. version....................£249.99
- Pagesetter 3...£42.99
- Pro Page V4...£109.99
- Pro Page V4 & Pro Draw 3...................£139.99
- Protext 4.3 W/P....................................£39.99
- Prowrite 3.3 *NEW!*................................£45.99
- The Publisher DTP.................................£24.99
- Wordworth 2 AGA.................................£44.99
- Wordworth 3 *NEW!*...............................£POA

CALIGARI

Caligari's main claim to fame is its interface. As the manual points out, 3D visualisation plays a major part in our daily lives. In line with this philosophy Octree have designed *Caligari's* interface around an interactive 3D environment. It's a real-time environment, so you can pull points, rotate and deform objects, move light sources and change viewpoints and gain immediate feedback. This should, in theory, be more intuitive than the traditional tri-view favoured by most other packages.

Whether or not this interface is really easier to use is debatable. When I first used this package I was horrified. However, this may be due to using tri-view environments for a while, or perhaps the fault of the technical drawing methods taught in school.

The program itself is quite modular in design. It consists of two main modules, **Object Design** and **Scene Design**.

The **Object Design** module is used for creating your objects. It has several menus, all of which are stackable. This means that they will pop up one on top of the other, and that you can delete any menu that is not in use. There are menus for navigation, status, tools and point editing. There are also menus for adding primitives and extruding objects. *Caligari* has a respectable number of tools, more than *Imagine* , but not as many as *Real 3D*. The **Extruder** is almost a module in itself. It has functions for importing 2-colour IFFs, a lathe and simple extrusion. It also has a rather handy snap to grid function.

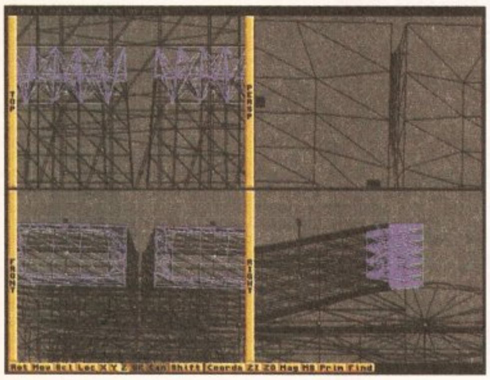
Among *Caligari's* benefits as a modeller are its deformation abilities and the ease with which you can create objects with good hierarchical structures (essential for complicated animations). The free form deformation functions really come into their own in the *Broadcast* version as you can animate a deforming object. This can be useful for all manner of objects, for example you can animate the implosion of a can or even a ship. *Caligari* also has a useful Shell-like programming language.

The main differences between *Caligari 24* and *Caligari Broadcast* can be found in the **Scene Design** module. This is where you can compile your animations and render your scene. The animation tool works by using the key-frame method. This is a method where you specify an object's size or position in a certain frame, and then move or resize it a few frames later on. The computer will work out the frames in between. *Caligari Broadcast* can also change an object's acceleration or deceleration.

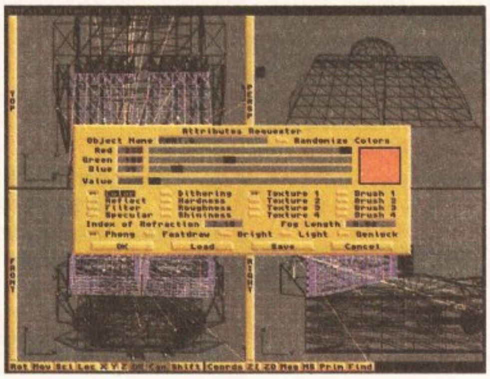
In conclusion, *Caligari's* interface can take some getting used to, but once you do you'll find it does have some advantages, especially in animation. It can also produce good images very quickly. It is also easy to position lights for the best effect, as *Caligari* will make the rays of light from a local source visible and will even give you a view from a light's position.

So, if you're looking for a 3D program that can produce quick results of a reasonable standard and have the time to get used to its unusual interface, this may be the one for you. We would especially recommend the *Broadcast* version to anyone who is considering getting into animation.

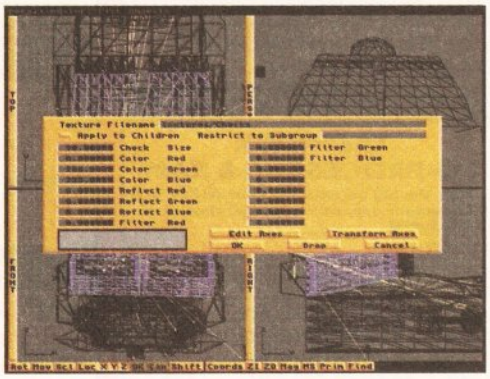
You can get *Caligari 24* for £99.95 and *Caligari Broadcast* for £399, from Meridian distribution by telephoning (0532) 319057.



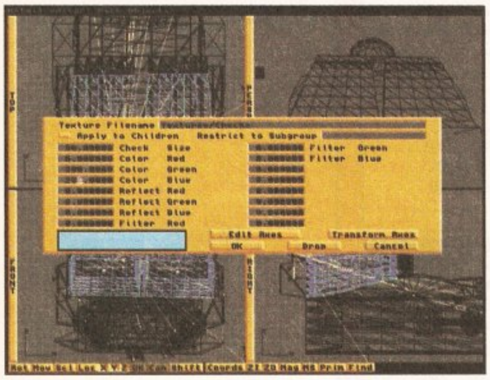
19.) This should produce several new fragments. Discard those you do not need and join the remainders. Find the two top engines, create a plane large enough to intersect the tips of both engines. Select the engines and press <right Amiga><x> again to cut through the ends. Again, throw away the bits you don't need until you have the parts in the screenshot. Be very careful both times when throwing away pieces.



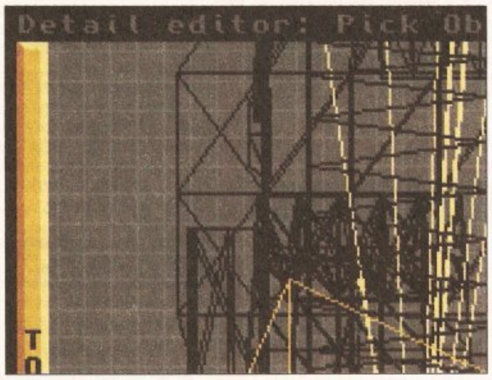
20.) Now that we have finished modelling the ship, we'll concentrate on improving its appearance. First, select the engines, not the tips created earlier on. Pull down Objects/Attributes to get the attributes requester again. You should already have loaded the plastic attribute. You can now choose a base colour for the ship. Simply click on the colour button, and then move the RGB sliders until you get a colour you like.



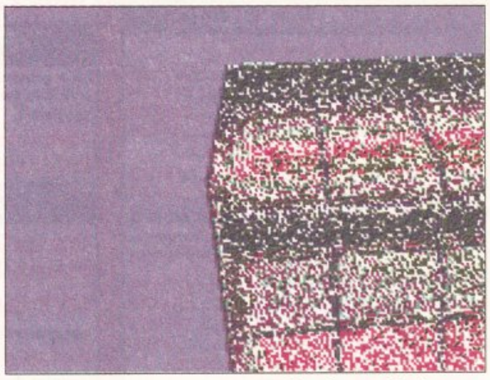
21.) Imagine supports procedural textures. These are mathematically defined so they can be resized without loss of quality. In keeping with the general Chris Foss feel of the ship, we'll select a bold checked texture. Click on the first texture button and then use the requester to find your textures folder. Select Checks and a window with details of the texture's options, such as the colour of the checks, should open.



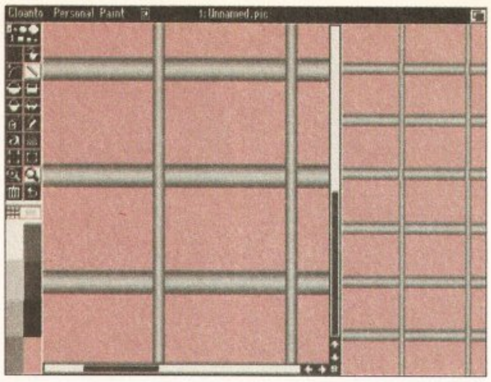
22.) The window has details of the size of the checks and their reflective and filter colours. There are two buttons labelled Edit Axes and Transform Axes. These work in the same way as they do with objects, but do so on the chosen texture. We won't need to edit the axes, as we'll be creating a simple checked pattern. Simply enter a few values, to contrast with your base colour (and possibly reflective and filter values).



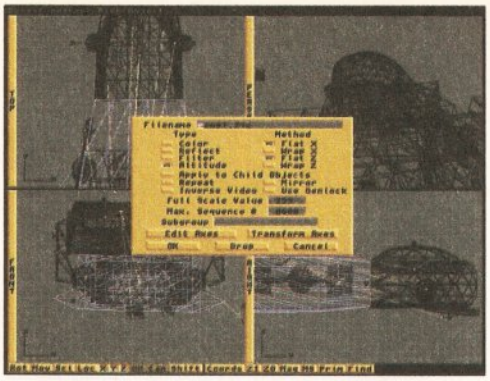
23.) Click on OK, return to the Attributes requester, click OK. Repeat the process for the second engine and return to the Detail Editor. Select the engine support and flaps, pull down the Attributes requester. Change each colour to the base colour. Select checks again, but try out the Edit Axes to produce some variety. Select each object and change their colour to the base colour of the ship, except those you want to stand out.



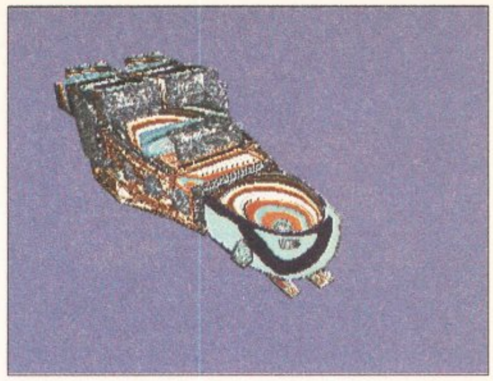
24.) Procedural textures are fine for producing variations in colour, but they can't simulate raised or lowered surfaces. To produce this kind of effect you should use a bump map. It takes differences in colour intensity from a graphic file, and uses this information to simulate different altitudes. The brighter the colour the higher the altitude is, the greater the contrast the steeper the change in altitude is. See above for an example.



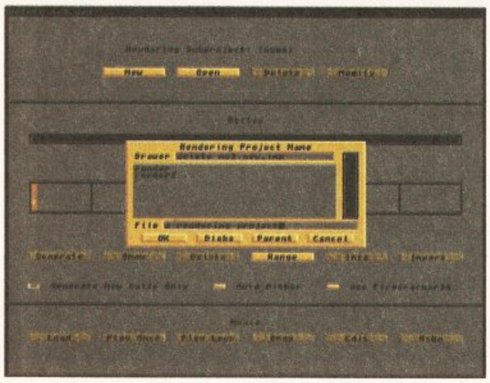
25.) To give the hull a panelled appearance, we can make a simple bump map using any paint package. Open a new file with a grey-scale palette (red-scale if your going to use Real 3D) of 8 colours. Zoom in and draw a line using the lightest colour. Select the second lightest colour and draw a line on either side of the first. Do this until you run out of colours or your line is thick enough, then cut and paste it to your desired pattern, and fill the rest with the darkest colour.



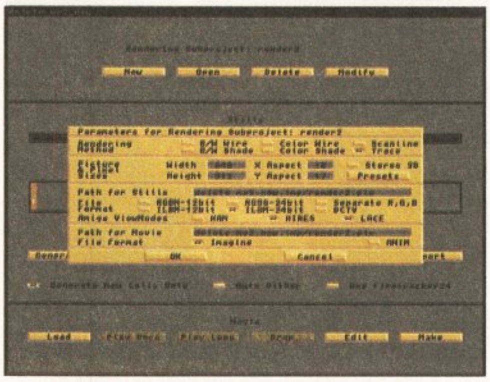
26.) the next stage is to import the bump map. To do this we need to select the hull, bring up the Attributes requester, click on the first Brush button. Select the graphic file you created earlier and you should see a new requester for brush mapping. Under the heading Type, click on the Altitude button and then on OK. Exit the Attributes requester and enter Pick Groups mode.



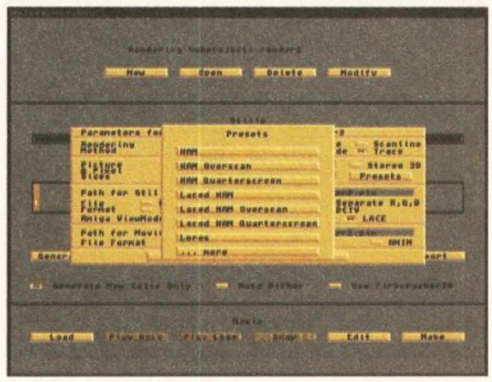
27.) Select all the objects we have created so far (you either press <right Amiga><a> or you shift-click on each object). Next, press <right Amiga><g> to group the selected objects, and then save the group using <right Amiga><s> and choose an appropriate name. To see very roughly what we have created, pull down Project/Quickrender. This will produce a rough render after a couple of minutes.



28.) This rendered image should give us an idea of what the final picture will look like. To render it properly, we'll need to return to the Project editor. Once there, you'll see a heading Rendering Subproject – directly beneath it are four buttons labelled New, Open, Delete and Modify. Click on New to create a new project. A requester will be asking for a name for your rendering project – enter one and you will be asked for a set of parameters.



29.) We'll take a brief look at each option available. You can choose from six rendering methods: B/W Wire, B/W Shade, Colour Wire, Colour Shade, Scanline and Trace. The Wire frame modes are excellent for previewing animations, and Shaded modes are quite good for producing quick results. The Scanline and Trace methods (Trace is a full ray trace) are used for producing final images, but take much longer to render. We'll select Trace for the best results.



30.) The next set of parameters give you an opportunity to specify the screen size and aspect ratio. It would be a real pain in the neck to have to calculate the aspect ratio of a screen each time you change screen sizes. Fortunately, Imagine has a set of preset screens and a set of their aspect ratios. Click on presets and choose a screen size. The higher the resolution you select, the longer the rendering time will be.

REAL 3D

Real 3D, along with *Imagine*, has been a long standing favourite of 3D enthusiast. But now, in version 2, it has jumped up a division above *Imagine 2.* Impulse have already plotted their counter-attack with version 3, however, but *Imagine 3* has definitely got its work cut out.

Real 3D has really been beefed up. It now has some the most powerful animation and modelling tools available. Its new editor is almost completely user-configurable, and its open architecture means you can add more tools as soon as they are created.

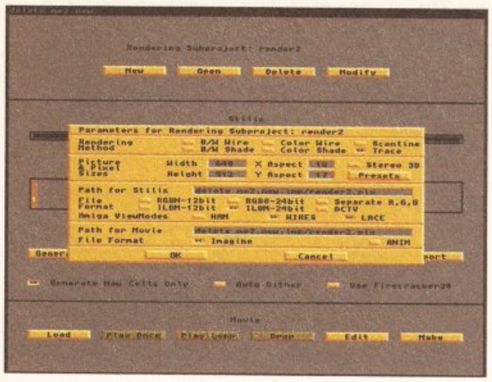
Perhaps its most notable changes have taken place in the animation department. As a brief overview, version 2 now sports **behavioural animations**, a **particle system**, **collision detection**, **skeletonal controls** and **inverse kinematics**. These tools provide an immense amount of control over your animations. You can even ascribe certain motions and behaviours to objects. There are a lot more options and applications available, so many that we cannot list them all here.

The modelling system has also been seriously overhauled. *Real 3D*, like *Caligari*, now features its own programming language. This is especially useful when creating animations, as are the savable macros that are now available. The modeller still has its **Boolean** operators and they have also been enhanced. There is also an unlimited **undo** function. Another note worthy addition is the fractal landscape and tree generator, as these objects are difficult to reproduce convincingly. **B-Splines** are also included – they make the creation of curved objects much easier and give smoother results. The **Autocad import** feature opens up a whole world of ready-made objects (without the need for a third party conversion program) as this is the most widely supported format for 3D objects across computing platforms.

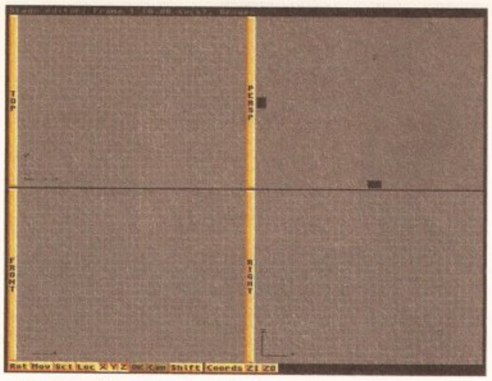
Real 3D's rendering module has now been fully integrated with its modeller. It also has some new features, such as atmospheric effects, motion blur, an unlimited number of textures and materials, alpha channel support, B-spline texture mapping, depth of field, blurred reflections and refractions and soft shadows.

Real 3D 2 has definitely out-classed both *Imagine 2* and *Caligari* in almost every department. It certainly represents better value for money than *Caligari*, as it offers more comprehensive features for roughly the same price. Whether *Imagine 3* will be able to rise to the challenge remains to be seen. But, if *Imagine 2.9* is anything to go by, it should be extremely fun finding out.

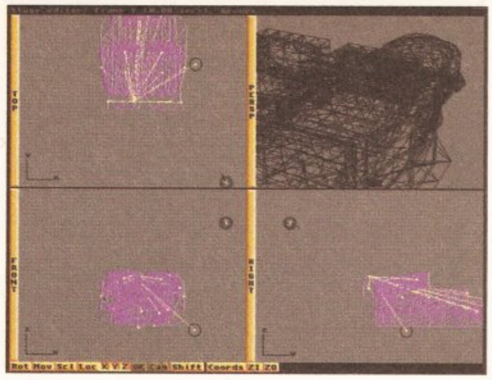
Real 3D 2.4 costs £349 plus VAT, and is available from Activa International, on 071-371 5241.



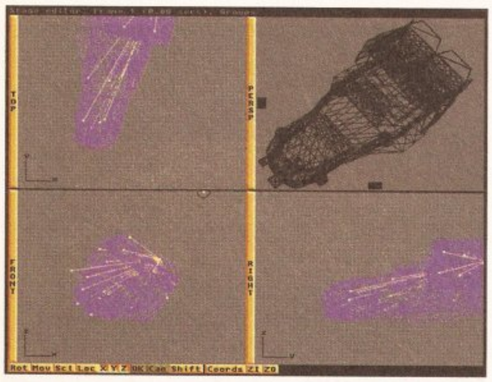
31.) You can also interlace the screen, or select a HAM viewing mode in the next section. If you own a non-AGA machine, you should select HAM so you can view the final image in the greatest number of colours possible. If you have an AGA machine or a 24-bit graphics card, you needn't do so as you can view the image, with little or no loss of quality, with a suitable graphics package. Select ILBM-24Bit as the file format and exit.



32.) Now that we have created a rendering project, we need to set a viewing angle and add light so that we can see the created objects. Go to the Stage Editor where we put scenes together, create animations and add lighting effects. Unfortunately, it is not as powerful or versatile as Caligari Broadcast's or Real 3D's equivalent tools. But, it does have some useful tools, so spend a little time getting use to them.



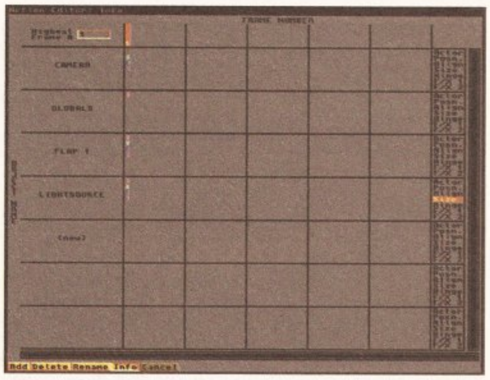
33.) The first we will need to do is load our object. Once that's done, we can add a light source or two. Pull down Object/Add/Light Source. You should notice the appearance of a second circle. The first one, with a line protruding from its centre, is the camera. You can add a number of light sources, but remember the more you add, the longer the scene will take to render and the more memory you will need to render it.



34.) You can move objects, lights and the camera around the screens (as with any object in the Detail Editor). You can also rotate the camera on its axis and scale light sources to change their intensity. For animations you can make the camera track an object. Once you have become familiar with the tools, select a pleasing angle for the camera (after pulling down Display/Camera View), and position for the lights. Rotating the ship can produce an impression of movement.



35.) After you change the position of lights or their intensity, it's a good idea to do a quick render to see how this effects the shading and the detail on the ship. However, as this is a simple project with just one composite object, we don't have to bother with complex lighting arrangements. The easiest way to produce a simple lighting effect by far is to add some ambient light. To do this we need to enter the Action Editor.



36.) As the name suggests, the Action Editor gives you control over the various objects and the scene of your project. However, it is also useful for editing the components of a still image. Each object is listed down the left-hand side. You can change its position and size and also hinge the object, or alternatively add an already saved effect over a period of frames. You can also create your own effects, such as simple morphs.

MODELLING THE SHIP WITH CALIGARI

Caligari's strong point when it comes to modelling is creating organic objects and this puts it at something of a disadvantage when it comes to creating artificial structures.

Perhaps the most pronounced difference in working with *Caligari* is its viewpoint. Although it is intuitive to use, it's difficult to work with any degree of accuracy. This is due to the fact that the default viewpoint is a perspective view, so objects that are further away appear smaller – just like in the real world. This can be a problem if you are to line up the points of an object.

You can get round this problem by switching to a single 2D view (such as from above or from left) when making intricate adjustments. When doing this, you must make sure your alterations are made relative to the 'world' and not the 'screen' as this will give you a true representation of your movements.

A more theoretical difference is that *Caligari* is a solid modeller. As *Caligari* has a healthy supply of primitives, you can easily pick up some to matche the shape of the ones mentioned in the tutorial. There is no need to worry if there are not enough points or sections as you can easily create some more, using the **QuadDivide** tool. There should be less of a need to extrude flat surfaces in *Caligari* than in *Imagine* as your objects will already be solid. You just simply need to deform the object or use the sweep function.

Whenever point selection or movement are mentioned, you need only enter **PointEdit** mode. This will allow you to select, move and scale certain points or whole faces. If you have a whole face selected while in **PointEdit** mode, you can use the sweep tool to extrude the surface. However, this will only extrude the surface by one section at a time. To alter the length of that section you need to click on the small button labelled **Num**. You can then enter a value in the sweep field for the number of units you want the sweep operation to extend the surface.

Instead of grouping objects together in *Caligari*, you glue them together, either to a new parent or as a sibling. You can then save the newly constructed object, complete with its hierarchy. Once you have completed the construction of the ship, you will need to go to the **Scene Design** module to add textures, a background and to render the scene.

Caligari also comes with a set of textures – a check one is included. If you are not happy with this texture, you can import an IFF file. When it comes to lighting a scene in *Caligari*, life is much simpler than when using *Imagine*. You can actually follow rays of light and see which objects they will strike. When you are ready to render you can also add a foreground, as well as a background, by making use of *Caligari's* **Alpha channel**.

MODELLING THE SHIP WITH REAL 3D

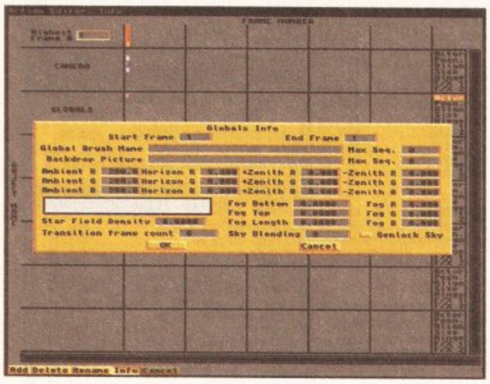
With *Real 3D's* huge range of primitives and brilliant **Boolean** operations, creating a relatively simple object is almost child's play. As with *Caligari*, the main thing you have to bear in mind is that *Real 3D* is a solid modeller so there is not nearly as much extrusion needed. As well as the comprehensive range of primitives, there are also some very good object creation tools such as the **lathe**. Try to become familiar with all of these tools so you can choose the most effective one for the job.

Working accurately is easy. Thanks to *Real 3D's* user-configurable interface you can open as many view windows as you please, with as many angles and views. Selecting, moving and modifying objects is also helped by *Real 3D's* hierarchical selection windows. There are also several useful manipulation tools that allow you to **Stretch** and **Skew** objects. Once you have become familiar with the **Boolean** operators, you will find that adding detail or altering an object's shape can be achieved, with judicious use, more easily and quickly than moving single or groups of points.

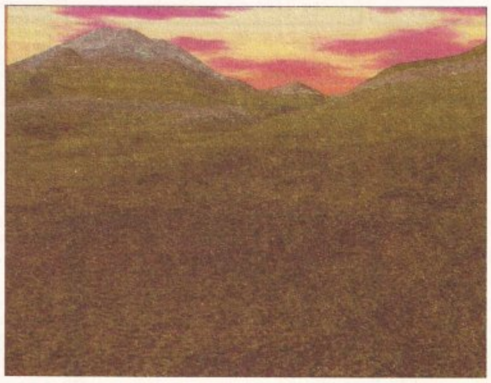
In addition, there is also a vast range of other extremely useful modelling techniques available, such as **B-Splines** and its set of freeform tools. Although you probably will not have to deviate too far from the main tutorial, it certainly wouldn't hurt to try and use different tools to produce similar effects.

As *Real 3D* is now an integrated package, there is no need to keep switching from editor to editor when you want to change an object's attributes, render a scene, or create an animation. For example when you have finished, or are even still in the process of modelling, you can open an **Attribute** window. This will give you access to the object's texture map, bump map and general attributes. You can leave this window open while you make other adjustments to objects, or even open a second window simultaneously. There is an enormous selection of attributes, bump maps and materials supplied with *Real 3D*.

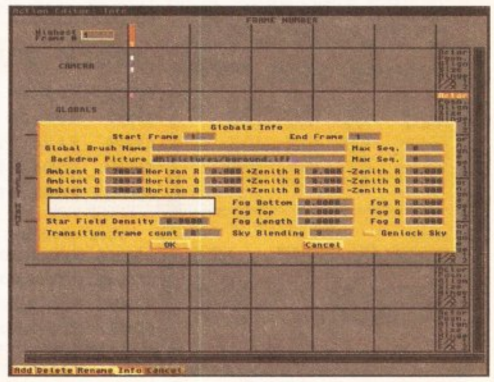
Rendering your finished scene is also a ridiculously simple matter of opening a window or screen. Like *Caligari* and *Imagine*, *Real 3D* also places it behind your rendered objects. It does this in the same manner as *Caligari*, by using an **Alpha channel**. This is a spare 8 bits (256 shades) of colour information set aside for transparency effects. The results are truly stunning.



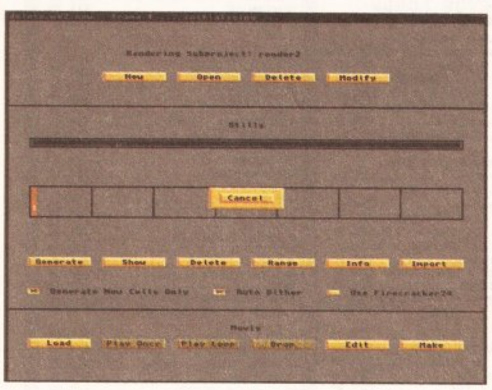
37.) One of the things we will use the Action Editor for in this tutorial is to add some background, or ambient, light. Ambient light isn't a local lightsource, but instead it spreads its light evenly over the whole 'world'. To add some ambient light, simply click on the red square next to the box marked Globals and then enter RGB values into three Ambient fields. It's best to keep the colours to levels of grey, unless you're trying to create a very particular effect.



38.) The remaining fields are mainly for producing limited atmospheric effects and sky-like backgrounds, such as the Star Field and Fog tools. Two interesting fields are the global map and backdrop picture. The global map will allow you to specify a path of a picture to wrap around the 'world.' This map can only be seen in a reflection and is only much use when using reflective materials. Back drop will display a picture in the background. To do this, create a suitable background such as a landscape.



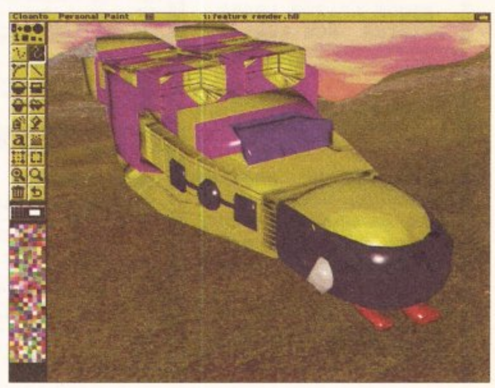
39.) Once your backdrop has been created, you need to specify an exact path for Imagine to follow. So, if the picture is called Bground.IFF, is located in a directory called Pictures on a hard disk partition called HD1:, you'll need to specify the following path: HD1:Pictures/Bground.IFF (please, don't forget to press return!). Now we are ready to render our scene. To do this, let's return to the Project editor.



40.) In the Stills section of the Project editor you will see several buttons. The ones we need to concentrate on are Generate, Show and Auto Dither. Generate will start the raytracing process, Show will display the resultant image and Auto Dither will dither the pixels to produce a much smoother appearance. To render the scene, you need to click on the first frame and then on Generate. The computer will start making the necessary calculations.



41.) The length of time your computer takes to produce an image depends on several factors, the most important being the speed of your hardware. If you are not using an accelerated Amiga, you can expect to wait quite some time. As mentioned before, if you add several lightsources and choose a high resolution screen you will also increase the rendering time. After a while, the computer will complete its calculations. When it has, click on Show.



42.) If you have an AGA Amiga, you'll probably be disappointed by the image on screen. Unfortunately, Imagine 2 is not AGA-enhanced and, to get the best view of your image, you'll need to use a third party graphics package with AGA support. Programs that have AGA support include, Dpaint 4 AGA, Brilliance, ADPro 2, ImageFX and a number of others. And that's that. Congratulations! Now you should be ready to design, build and render your own masterpieces.

ALL PRICES INCLUDE VAT

TRILOGIC

ALL DRIVE SIZES ARE APPROXIMATE & VARY WITH MAKE SUPPLIED

UNIT 1,
253 NEW WORKS RD,
BRADFORD, UK,
BD12 0QP Est 1984
FAX 0274 600150

SALES 0274 691115

ACCESS VISA SWITCH DELTA CONNECT AMEX

SWITCH CARDS ACCEPTED FOR TELEPHONE ORDERS

FAST PROFESSIONAL MAILORDER SERVICE. SAMEDAY DESPATCH^

1) Order by phone using your credit, charge, or debit card.
2) Order by Mail - sending cheque bankers draft or postal orders payable to TRILOGIC.
3) Please add part postage & packing of £1.00 to small orders under £100 or £2.00 to small orders over £100. Large/heavy or fragile items sent by carrier only: 48HR £5.50; Overnight £7.50 Uk Mainland only. Scottish Highlands £9.50; N.IRELAND. £12.00; EIRE +£20 UK Saturday delivery £14.00 (Not available to Scottish Highlands) Goods remain our property until paid for. ^Subject to goods being in stock.

HARD DRIVE 1200s AT LOW PRICES

FROM THE UKs No. 1 AMIGA HARD DRIVE SPECIALISTS

A1200 NO HD	ONLY £279.99
A1200+64MEG	ONLY £439.99
A1200+80MEG	ONLY £454.99
A1200+170MEG	ONLY £499.99
A1200+212MEG	ONLY £514.99
A1200+250MEG	ONLY £539.99
A1200+270MEG	ONLY £559.99
A1200+340MEG	ONLY £599.99
A1200 + 420MEG	ONLY £699.99
A1200 + 540MEG	ONLY £799.99

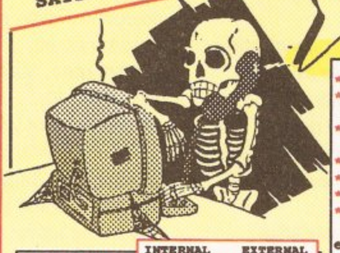
OPTIONAL 2ND YEAR WARRANTY £27.99

ALL PRICES INCLUDE 12 MONTHS WARRANTY - covering computer & drive. FREE COLLECTION/DELIVERY in the event of breakdown.

PRICES SHOWN ARE FOR RACE n CHASE PACK ADD £50 FOR DESKTOP DYNAMITE PACK

HAVE A HARD DRIVE FITTED

WE'RE THE HARD DRIVE EXPERTS - 100s OF SATISFIED CUSTOMERS



OH DEAR! HE NEEDS A HARD DRIVE !

	INTERNAL	EXTERNAL
SUPPLIED READY TO FIT & USE		
40 MEG	only £129.99	n/a
64 MEG	only £159.99	n/a
80 MEG	only £179.99	n/a
170MEG	only £219.99	£279.99
210MEG	only £234.99	£294.99
250MEG	only £259.99	£319.99
340MEG	only £299.99	£359.99
420MEG	only £399.99	£459.99
540MEG	only £499.99	£619.99

PRICE INCLUDES:

* FREE FITTING WHILE U WAIT
* OR IF DIY - CABLES & FULL INSTRUCTIONS INCLUDED.
* READY FORMATTED & PARTITIONED DRIVE.
* FULL WORKBENCH INSTALLED.
* 12 MONTHS WARRANTY.
* JUST PLUG IN & GO.
* ONLY FAMOUS MAKES OF DRIVE FITTED each selected after extensive testing on an A1200.
* FREE UTILITIES worth £19.99 see opposite for details.
* COLLECTION SERVICE

Not local ? - we collect fit, & return by overnight carrier for only £19.99 extra. (Mainland only)

AND REMEMBER

If we fit the drive, we cover your computer for the remainder of its 12month warranty.

YOU CAN'T GO WRONG...

ALL OUR DRIVES FIT INTERNALLY WITH NO MODS TO CASE, OR FLOPPY DRIVE.

All drives are formatted, partitioned & FULL workbench is installed so they are ready to use. We've 100s of satisfied 1200 hard drive users & *If we fit the drive - we cover your Amiga for the remainder of its 12month warranty*, so don't be put off by 'SOUR GRAPES' warnings from other advertisers !

FREE *with All HARD DRIVES & HARD DRIVE AMIGAS OVER 200MEG**

HARD DISK TOOLS

Rated 91% in March '93 Amiga Format. Similar to Quarterback Tools Deluxe, but better. Complete with manual. *Just £15.99 with smaller drives, otherwise £19.99

NEW CHAOS PLUS PACK £19.99

CHAOS ENGINE
SYNDICATE
PINBALL FANTASIES
NICK FALDOS CHAMPIONSHIP GOLF
QUALITY JOYSTICK
MOUSE MAT
DUST COVER
+ FREE EXTRA GAME (our choice)
ONLY £19.99 WITH ANY HARD DRIVE AMIGA. Standard Chaos Pk £29.99
LIMITED STOCKS
A1200 / 4000 ONLY

AMIGA 4000

A4000 030	2MEG	4MEG	6MEG
80M HD	£899	£979	£1059
130M HD	£939	£1019	£1099
170M HD*	£969	£1049	£1129
212M HD*	£999	£1079	£1159
250M HD*	£1029	£1099	£1179
340M HD*	£1099	£1199	£1249

PLEASE PHONE FOR LATEST PRICES

* SPECIAL OFFERS SUBJECT TO AVAILABILITY

4000 040/6MEG - ADD £750 TO 030 6MEG PRICES

DATAFLYER SCSI INTERFACE £79.99
GVP SCSI INTERFACE £119.99

ADD PC COMPATIBILITY

VORTEX 386 PC CARD £339.99
VORTEX 486 PC CARD £599.99
GG FDD CONTROLLER CHIP £29.99

ADD A SECOND HARD DRIVE *FROM £159.99*

32BIT RAM CARDS

0MEG	£69.99
1MEG	£94.00
2MEG	£124.99
4MEG	£194.99
8MEG	£389.99

BATTERY BACKED ON-BOARD CLOCK & FPU SOCKET

Made by Amitek

WITH OPTIONAL 68882 FPU.

20MHZ FPU ADD £49.00
25MHZ FPU ADD £59.00
33MHZ FPU ADD £69.00
40MHZ FPU ADD £99.00

PRINTERS

PRICES DOWN

CITIZEN PRICES DOWN

CITIZEN SWIFT 90 MONO £149.99
CITIZEN SWIFT 90 COLOUR £159.99
CITIZEN SWIFT 240 MONO £204.99
CITIZEN SWIFT 240 COLOUR ... £229.99
CITIZEN SWIFT 200 MONO £179.99
CITIZEN SWIFT 200 COLOUR ... £194.99
PROJET II - NEW MODEL £239.99
PROJET II COLOUR............ £299.99

HP DESKJET DEALER

DESKJET 550 C £494.99
DESKJET 310 MONO............ £234.99
DESKJET 310 COLOUR.......... £274.99
310 SHEET FEEDER............ £49.99

CANON DEALER

CANON BJ10SX £195.99
CANON BJC600 .... £569.99
BJ10 AUTO SHEET FEEDER £49.99

RICOH DEALER

RICOH LP1200 LASER PRINTER NOW £689.99

MONITORS

COMMODORE 1084S £189.99

14" SVGA 0.28mm HIRES MONITOR £229.99 FOR 31KHZ MODES ONLY

MICROVITEC CUBSCAN 14 *HI-RES COLOUR MONITOR* with Digital memory picture sizing for borderless display NOW ONLY £399.99 *WORKS IN ALL 1200 MODES*

MICROVITEC 20" CUBSCAN £949.99

SUPERFI 1 STEREO SPEAKERS £19.99 WITH ANY CUBSCAN/AUTOSCAN MONITOR

MICROVITEC AUTOSCAN 14 *HI-RES COLOUR MONITOR* (Similar spec to above, without Digital memory) NEW only £289.99

DIY HARD DRIVE KIT

AMIGA 600/1200 XDS 3.5" HARD DRIVE HOUSING KIT

* COLOUR MATCHED ALLOY CASE
* TAKES 3.5" IDE DRIVES
* IDE ADAPTOR & 2.5" CABLE inc power connector.
* HD INSTALL / PREP DISK
* EXTERNAL PSU SOCKET

ONLY £69.99

2.5" TO 2.5" IDE CABLE £9.99
3.5" TO 2.5" ADAPTOR & CABLE £21.99

A1200 ACCELERATORS

NEW GVP A1230-2 40MHz

With 68882 socket for FPU. Has two 32bit simms skts & expansion connector.
WITH no fpu & 0meg £299.99
WITH 4MEG no FPU £439.99
WITH 4MEG & 40MHz 68882 .... £539.99

NEW GVP A1230-2 50MHz

50MHz WITH no fpu & 0meg ... £364.99
50MHz WITH 4MEG no FPU £539.99
SCSI MODULE £74.99

VIDEO DEPT

GVP GENLOCK £289.99
MINIGENLOCK PRO £144.99

PRO VIDEO PROCESSOR ONLY £149.99

A standalone TWO input audio & VIDEO MIXER (with SVHS in/out). Has crossfade, fade to black, overlay; wipes, tint & 2 mic + stereo line inputs. AMAZING VALUE

VIDI 12 .... £ 78.99
VIDI 12RT £179.99
VIDI 24RT £249.99
GVP IV 24 from.............. £989.99
GVP EGS SPECTRUM FROM £339.99
EPSON GT6500 COLOUR SCANNER £689.99
EPSON GT8000 COLOUR SCANNER£1189.99
ADSG SOFWARE with scanner .. £98.99
ADSG available separately .. £109.99

TOP SOFTWARE

EDUCATIONAL TITLES SUPPLIED E

ADSG SCANNER SOFTWARE £109.99
ADI JUNIOR RANGE............ £14.99 E
ADI RANGE .... £17.99 E
AMOS £31.99
AMOS - EASY £23.99
AMOS 3D £22.99
AMOS COMPILER............... £19.99
AMOS PROFESSIONAL - DOWN TO £37.99
AMOS PRO COMPILER........... £23.99
ART DEPT PRO AGA............ £139.99
BRILLIANCE £144.99
BARS AND PIPES PRO V2 ...... £229.99
CROSS DOS V5 .... £34.99
DELUXE PAINT 4AGA........... £64.99
DELUXE MUSIC 2.............. £64.99
DEVPAC 3 .... £57.99
DIRECTORY OPUS V4 ONLY .. £48.99
DISTANT SUNS V4.2........... £49.99 E
EDITMATE £189.99
FINAL COPY 2 r2 NEW VERSION £67.99
FINAL WRITER................ £99.99
FUN SCHOOL 3 RANGE .... £14.99 E
FUN SCHOOL 4 RANGE .... £17.99 E
GIGAMEN £54.99
GB ROUTE PLUS £35.99
GOLD DISK OFFICE 3 .... £44.99
HYPERCACHE £37.99
HISPEED PASCAL.............. £72.99
HISOFT BASIC £49.99
HOME ACCOUNTS 2............. £34.99
IMAGEMASTER - £119.99
KID'S PIX £19.99
KINDWORDS 3 .... £24.99
LATTICE/SAS C V6............ £239.99
MAKEPATH FOR VISTA £29.99
MAXIPLAN V4 .... £25.99
MERLINS MATHS .... £17.99 E
MICRO RANGE .... £17.99 E
MINI OFFICE BARGAIN .. £38.99
MORPH PLUS £13 OFF .. £139.99
MONEY MATTERS £49.99
MUSIC X 1.1 .... £24.99
NOODY'S PLAYTIME............ £17.99 E
NODDY'S BIG ADVENTURE ...... £17.99 E
PAGESETTER 3................ £41.99
PAINT n CREATE .... £17.99 E
PAGESTREAM 2.22............. £69.99
PENPAL STILL ONLY ... £35.99
PROFESSIONAL DRAW 3 .... £POA
PROFESSIONALPAGE 4 .... £99.99
QUARTERBACK 5 .... £49.99
QUARTERBACK TOOLS DELUXE ... £99.99
REAL 3D PROFESSIONAL V2 .... £349.99
SCALA MM200 .... £144.99
SCENERY ANIMATOR............ £59.99
SPELLING FAIR .... £17.99 E
STEREOMASTER SAMPLER £29.99
SUPERBASE PERSONAL 4 .... £119.99
SUPERBASE PROFESSIONAL 4 ... £239.99
TECHNOSOUND TURBO 2 .... £39.99
TEN OUT OF TEN RANGE .... £18.99 E
TERRAFORM £26.99
TURBOPRINT PRO V2........... £34.99
UPPER HARD DISK TOOLS £19.99
VIDEO DIRECTOR.............. £109.99
VISIONARY £34.99
VISTA PRO 3 .... £57.99
WORDWORTH 2 *aga* £44.99

BOOKS & VIDEOS

BRUCE SMITH BOOKS

MASTERING AMIGA AREXX £21.95
MASTERING AMIGA DOS 2 VOL 1 £21.95
MASTERING AMIGA DOS 2 VOL 2 £19.95
MASTERING WORKBENCH £19.95
MASTERING AMIGA DOS 3 VOL 1 £21.95
MASTERING AMIGA DOS 3 VOL 2 £21.95
MASTERING AMIGA C........... £19.95
MASTERING AMIGA PRINTERS ... £19.95
MASTERING AMIGA ASSEMBLER .. £24.95
MASTERING AMIGA SYSTEM £29.95
MASTERING AMIGA AMOS £19.95
A600 INSIDER GUIDE £14.95
A1200 INSIDER GUIDE £14.95
A1200 THE NEXT STEPS £14.95
ASSEMBLER INSIDER GUIDE £14.95

VIDEOS

DELUXE PAINT 4 VIDEO £12.99
ADVANCED DELUXE PAINT 4 .... £12.99

3.5" AMITEK DRIVE

ONLY £54.99

ANTI VIRUS/ ANTI CLICK/ DISABLE SWITCH/ THRU PORT/ STEEL CASE/ FOR ALL AMIGAS; 2YR WARRANTY.

MISCELLANEOUS ITEMS

AMIGA PRINTER PORT EXPANDERS

FREE CABLE WORTH £10.99

2way - £24.99 inc cable
3way - £27.99 inc cable
4way - £29.99 inc cable

For connecting upto 3 devices to your computers PRINTER PORT. Switch to computer lead incuded:- State 'LONG' for printers) or Short for Digitiser, scanner & samplers.

SEAL N TYPE KEYBOARD SKINS £12.99

KEEPS OUT DUST & LIQUIDS.

Fit snugly over your keyboard - moulded to fit over each key, but flexible enough to type through unhindered. Available for all AMIGAs - please state which.

MONITOR LEADS

CD 32 RANGE available - please enquire.

AL1 - MOST TVs WITH SCART SOCKET TO ALL AMIGAS inc audio lead .. £13.99
AL6 AMSTRAD CPC 464 MONITOR £13.99
AL6B AMSTRAD STEREO MONITOR £14.99
AL7P CM883/1084S MONITOR TO ALL AMIGAS inc sound lead £14.99
AL11 9PIN MALE MULTISYNCS LEAD TO ALL AMIGAS £12.99
AL12 15PIN FEMALE 3ROW Many multisync monitors £14.99
AL13 15PIN MALE 3ROW Many multisync monitors £14.99
PRODUCTIVITY LEAD FOR MULTISYNC MONITORS 9 or 15 plug or skt £19.99
MODULATOR EXTENSION LEAD - Reduces modulator overhang £10.99
MONITOR SWIVEL - HEAVY DUTY £12.99
A1200 WORKSTATION........... £39.99

SPARES & MISC

TV MODULATOR (exchange) £19.99
L520 TV MODULATOR - NEW £29.95
PARNET CABLE 2M LONG £19.99
KICKSTART 1.3 ROM £29.99
KICKSTART 2.04 ROM £29.99
8520A I/O CHIP.............. £15.99
A500 INTERNAL DRIVE £59.99
GVP GENUINE PSU............. £69.95
A500/600/1200 PSU £39.99
A1200 INTERNAL CLOCK MODULE £15.99

BACKUP UTILITIES

X COPY PRO £25.99
Mk1 CYCLONE ADAPTOR £12.99

NB. Making backups without the permission of the copyright holder is illegal.

TOP AMIGA GAMES

AIR BUCKS 1.2 A1200 .... £26.99
ALFRED CHICKEN.............. £27.99
ALIENS 3 .... £19.99
ALIEN BREED 2 .... £22.99
BURNING RUBBER A1200 .... £19.99
CHAMPIONSHIP MNGR 92/3 ..... £17.99
CHAMPION SHIP MNG 94 UPGRADE £9.99
CHESS CHAMPION 2175 .... £14.99
CAMPAIGN 2.................. £26.99
CIVILISATION A1200 .... £29.99
COMBAT AIR PATROL £22.99
COOL SPOT £22.99
DESERT STRIKE £23.99
DENNIS A1200 .... £30.99
ELITE 2 - FRONTIER £22.99
FLIGHT SIM 2................ £29.99
FLIGHT SIM BRIT SCENERY £32.99
FLIGHT COMMAND.............. £20.99
GRAHAM GOOCHS WORLD CRICKET £23.99
GUNSHIP 2000 .... £26.99
HIRED GUNS £24.99
ISHAR A1200 .... £22.99
ISHAR 2 A1200 .... £22.99
JURASSIC PARK £19.99
KINGMAKER £27.99
NIGHTHAWK £26.99
PREMIERE MANAGER 2 A1200 ... £19.99
RYDER CUP GOLF .... £
RULES OF ENGAGEMENT £24.99
SCABBLE £21.99
SENSIBLE SOCCER 92/93 ...... £18.99
SETTLERS £25.99
SIMON THE SORCERER A1200 ... £30.99
SKIDMARKS £19.99
SIM LIFE A1200.............. £26.99
SPACE LEGENDS £23.99
SPORTSMASTERS 1200 .... £22.99
STAR TREK A1200HD £23.99
TRANSANTACTICA A1200 .... £22.99
TERMINATOR 2................ £22.99
URIDIUM 2................... £19.99

CD32 TITLES

ALFRED CHICKEN.............. £19.99
ARABIAN KNIGHTS............. £14.99
DEGENERATION................ £24.99
DEEP CORE £24.99
JAMES POND 2................ £24.99
JOHN BARNES FOOTBALL £14.99
JURASSIC PARK £26.99
LIBERATION £26.99
LABYRINTH £21.99
MEAN AREANAS £24.99
MICROCOSM .... £ ?
MORPH £24.99
NIGEL MANSELLS G PRIX £24.99
OVERKILL £24.99
PINBALL FANTASIES........... £26.99
PROJECT X £24.99
SENSIBLE SOCCER............. £24.99
WHALES VOYAGE £24.99
ZOOL £24.99

MICE & JOYSTICKS

BEETLE MOUSE £15.99
LEGEND BALL £29.99
EKLIPSE MOUSE £14.99
MEGA MOUSE 2................ £12.99
MEGA MOUSE 400DPI £14.99
LOGIPAD CONTROLLER £16.99
STARFIGHTER CONTROLLER £8.99
PYTHON JOYSTICK............. £8.99
TOPSTAR JOYSTICK............ £14.99
ZIPSTICK AUTOFIRE £12.99
PRO ANALOGUE JOYSTICK £19.99
CD32 CONTROL PADS £14.99
MOUSE JOYSTICK SWITCH £9.99

AMIGA 500 HARD DRIVES & UPGRADES

GVP SERIES II HD8+ 42 Meg for A500 - PRICE DOWN - £191.99
GVP SERIES II HD8+ 170meg for A500 SPECIAL OFFER £349.99
GVP SERIES II HD8+ 340meg for A500 SPECIAL OFFER £469.99

GVP SERIES II HC8 for A1500/2000/4000 - NO DRIVE £119.99
GVP SERIES II HC8 + 42meg for A1500/2000 £191.99
GVP SERIES II HC8 + 170meg SPECIAL OFFER £349.99
GVP SERIES II HC8 + 340meg SPECIAL OFFER £469.99

VORTEX AT ONCE CLASSIC 286 PC EMULATOR FOR A500 ETC £69.99
GVP PC286 PC EMULATOR CARD FOR SERIES II HARD DRIVES £99.99

A590 & GVP SCSI DRIVE UPGRADES. EASY TO FIT.
170MEG £229.99
340MEG £319.99
420MEG £409.99
Suitable for GVP HD8/HC8/A530 & CBM A590

COMPUTER MUSIC DEPT

PRO MIDI INTERFACE ONLY £22.99

UNIQUE 5 PORT DESIGN COMPATIBLE WITH ALL AMIGA MIDI SOFTWARE

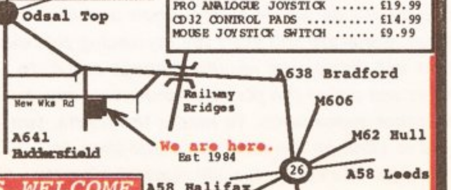
Midi leads 1.2m -£1.99 3m - £2.99

SUPERFI 2 STEREO SYSTEM HI FI QUALITY & only £54.99

20WATTS BASS, TREBLE & VOLUME CONTROLS

SUPERFI 1 STEREO SYSTEM ONLY £19.99 (Optional mains psu £4.99)

E&OE. Please phone before calling to confirm price & availability. (C) TRILOGIC 1994 All rights reserved. OPEN MON-FRI 8-6pm, SAT 8-4.30. Sunday - phone for hours.



CALLERS WELCOME

PRICES WERE CORRECT AS OF 8-2-94, but some may have changed by the time you read this.

All registered Trademarks are acknowledged. Callers are most welcome but please phone first to check availability & avoid disappointment - we try to keep most items in stock unlike some of our competitors and will gladly put items aside for you to collect, but shortages of some items do occur from time to time. 2% surcharge applies to some items paid by Credit card - does NOT APPLY to debit cards - ie SWITCH/DELTA/CONNECT AND cash/cheq. 4% SURCHARGE ON ALL AMEX CARD SALES

HOW DOES THIS GRAB YOU?



Rombo has thrown down the digitising gauntlet with their new Vidi 12RT and 24RT grabbers. Gary Whiteley rates their chances in a tough market.

I have followed the progress of Rombo's Amiga digitisers with interest over the last few years I have always been incredibly impressed by the way they manage to keep adding more and more features into their products. At the same time, they've succeeded in keeping the hardware the same size and often bringing the cost down simultaneously.

As a provider of great value, good quality Amiga video digitisers, Rombo has always taken first place in recent years. With their two new **real-time** grabbers they have finally taken on the established competition: MacroSystem's *VLabs*, JCL's *ColorPic Plus* and Electronic Design's *FrameStore* and *FrameMachine*, each of which will take some beating.

Although they were delayed for a few months (shortages of components being the main reason), I am told that the digitising software has benefited because there was extra time to add new features and iron out some bugs.

PEAS IN A POD

Both grabbers are as alike as peas in a pod, apart from the different logos on each unit, which is understandable since they are both built into Rombo's standard, pocket-sized casing. Unlike their predecessors, the RT boxes are beige coloured, not black and there are now no external controls fitted. Additionally, power is now taken from an external 9V DC supply (not included), which means that there is no longer any need to plug the unit into the disk drive port.

The only other major difference between the two is that the maximum resolution of the *Vidi Amiga 12RT* is interlace overscan (368 x 576 pixels). The *24RT*, on the other hand, can go the whole hog to hires interlace overscan (720 x 576). This is a consequence of the *12RT* only having half the video memory (framebuffer) that the *24RT* has (I know, I looked inside the boxes).

Apart from that, the hardware and software appears absolutely identical in both cases.

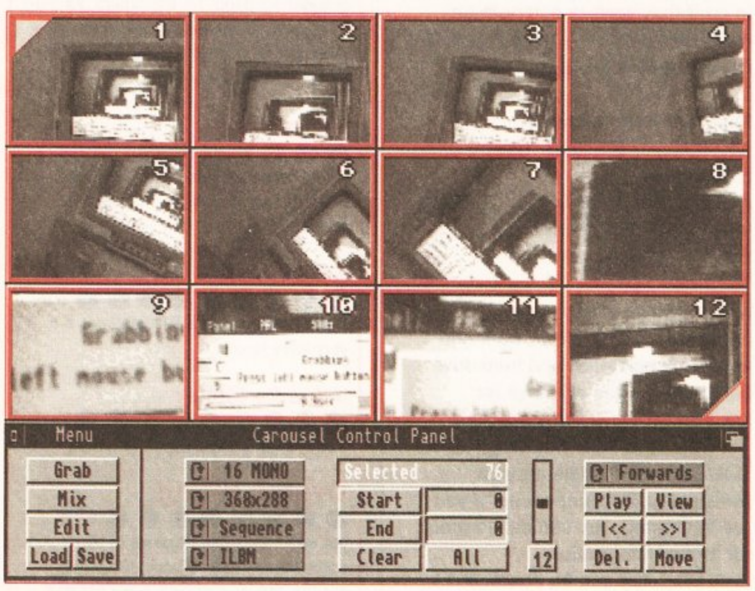
Like earlier Vidi digitisers, there are **composite** (two phono sockets) and **YC** (S-VHS) video inputs. Note, however, that only one input can be used at a time. The *RT* hardware can be attached directly to any Amiga 500, 600 and 1200, though an extension cable is required for most other models. This external fitting is one of the strengths of the *RT's*. Even the *24RT* substantially reduces the cost of adding a real time video grabber to any Amiga.

So what about the software, the heart of the *RT* packages?

Vidi-Amiga 12 users will most probably recognise almost all of the *RT's* software. The layout, screen arrangement and operation will be astonishingly familiar. Previous owners will adapt effortlessly to the *RT* software, from initial parameter settings, to the grab, carousel and mix screens. Newcomers should have little problems with all but the most obscure operations (of which there are mercifully few). It must be said, however, that the lightweight, photocopied manual could be more forthcoming in terms of how to operate all the various parts. Although I had no troubles at all, my familiarity with the Vidi products gave me an advantage which most novices won't have.

Rombo have tried hard to make the software as flexible as possible. They've not only added full AGA, 12- and 24-bit support to the normal ILBM range, but two other (non-Amiga) formats have also been included. These are **TIFF** and **BMP**, two formats commonly used by PC and Mac programs. Notable by their absence, however, are two very popular file formats: **GIF** and **JPEG**. Both would be very useful if included. **GIF** because it is a standard for many image libraries and BBSs. **JPEG** because it offers substantial space saving through image compression techniques, while exhibiting minimal quality loss. The lack of **JPEG** will hopefully be addressed very soon, because it really is one of the'must-haves' for 24-bit work and absolutely vital for floppy disk users.

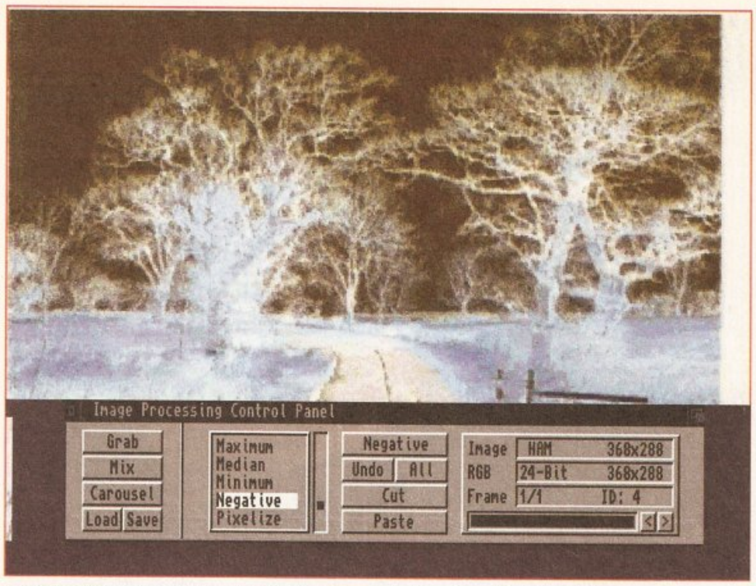
New facilities include extensive image processing and file format features. They may or may not be useful, but, as they are effectively for free, who's complaining? There is: negative, sharpen, blur, saturation, exposure, gamma, contrast, brightness, emboss, edge, average, threshold and several more,



The Carousel Control Panel will make your day brighter by providing you with extremely convenient access to grabbed images and load/save functions.

REAL TIME CONTROL

Real time digitising does not equate to instantaneous video to Amiga capture and conversion. It means that a video frame can be instantly grabbed into video memory (in the digitising hardware) in only 1/25th of a second (the time it takes to display a frame of video), but it must be converted into a form that the Amiga can understand. It is this latter processing that takes the time, not the initial grab. No current Amiga frame grabber can actually grab continuous video in real time because of this. It confuses some people no end when they think that 'real time' means real time.



Plenty of image processing features are to be found in the Edit screen.



Here's what the video preview looks like on an AGA Amiga.

including convolving (which lets you build your own processing effects, if you can work out how).

If you are lucky enough to have a *Harlequin* or *Retina* graphics card, you can display your grabs directly to it. Doubtless other cards will be supported in time. AGA Amigas can preview the incoming video in 256 shades of grey (other Amigas can only use 16 shades though). There's even support for *Super Hires*, if you have a suitable Amiga. If you don't live in a PAL TV country, the RT will automatically detect whether it is being fed NTSC or SECAM video.

There are one or two other problems though. While both *12RT* and *24RT* models can perform sequence grabbing, they can only do it in 256 greyscales. This means that non-AGA owners must first convert the images (internally, using the Mix functions) to 16 greyscales, before they can play them back. There appears to be no way around this, despite trying all the pre-grab settings I could think of. Not even dropping the colour is enough to allow the *RTs* to grab video in one unbroken sequence. Plenty of memory and a fast Amiga help improve the frames per second capability though.

Another omission is a de-interlacing routine to remove any motion artifacts from an interlaced grab. Rombo suggest using a non-interlaced resolution if motion artifacts prove to be a problem, but this isn't always a suitable solution.

The other serious problem is that the live video preview isn't particularly fast, not even when reduced to quarter-screen size. The resolution isn't marvellous either, so you might be better advised using a separate monitor (or the camcorder's viewfinder) if you need to single out a particular frame. You stand only a very slim chance of it being seen on the preview screen, which only appears to show about one new frame every second and that's not enough at this level.

At such good prices, most of the problems are not necessarily major drawbacks. I would expect Rombo to address some of them fairly quickly anyway. After all, it is extremely rare that a product is perfect on first release. Rombo also includes a flyer in the package, informing all registered users that they will be informed as and when software upgrades become available.

So, summing it all up, the *Vidi RTs* are a bit of a mixed bag. If you're in need of a good quality 24-bit grabber, but have a limited budget or need an external unit, then it would be foolish to ignore these new offerings from Rombo. Even with composite video inputs, the results can be incredibly impressive. If you use the YC inputs, the grabbing quality really shines.

On the other hand, a few more bells and whistles could turn these *Vidi RTs* into *really* excellent products. In conclusion I would say Rombo still has a bit of catching up to do if they want to compete on equal terms with the VLab range, the current market leaders.

Minimum Requirements:
Any Amiga (extra cable may be required for A1500/2000/3000/4000 models).
Vidi Amiga 12RT - 1MB ram
Vidi Amiga 24RT - 2MB ram

More memory is especially recommended for 24-bit work and editing. Accelerated and hard-drive equipped Amigas will have an advantage over standard models.

Upgrades from Vidi-Amiga 12 to Vidi-Amiga RT models are now available at discount prices. If you are interested, you can call Rombo for further information.

Gary Whiteley can be contacted by e-mail as drgaz@cix.compulink.co.uk



This peaceful grab was taken from Hi8 video tape. YC video provides considerably sharper images than composite.

SHOPPING LIST

SHOPPING LIST
Vidi-Amiga 12RT £169.00
Vidi-Amiga 24RT £299.00

From ROMBO Productions Limited, Baird Road, Kirkton Campus, Livingston Campus, Scotland EH54 7AZ.
Tel: 0506 414631.

CHECKOUT
PRODUCT NAME

Quality
●●●●●●●●●○
Very good, especially in 24-bit. AGA modes are also very nice. YC makes for better grabs than composite alone can provide.

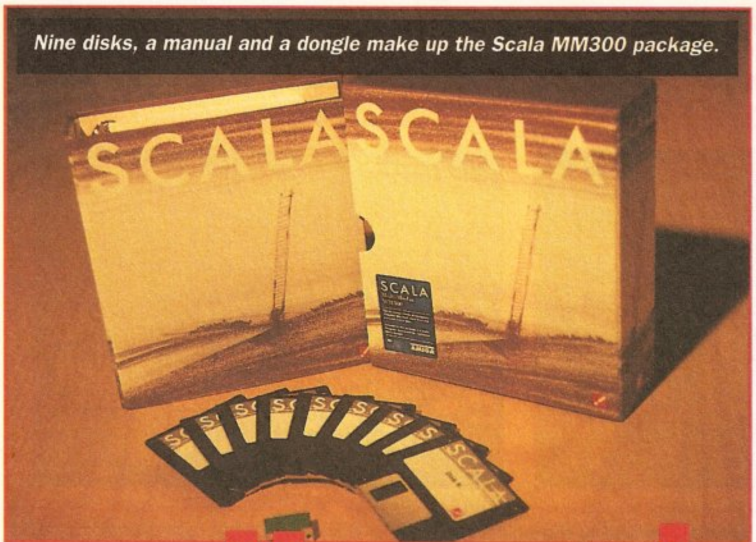
Speed
●●●●●●●●○○
Comparable to every other real time grabber available for the Amiga. Fast on the grab, but the rest of the processing depends on available memory and the speed of the host Amiga.

Documentation
●●●●●●●○○○
Could be better - especially now the products are aiming at professional applications.

Ease of Use
●●●●●●●●●○
Once mastered, the RT digitisers are very easy to use.

Value for Money
●●●●●●●●●○
Beats all the competition on price.

Overall rating
●●●●●●●●○○
Let down by some aspects of the software and lack of included power supply, the RT grabbers nevertheless offer great value, high-quality grabbing.



Nine disks, a manual and a dongle make up the Scala MM300 package.

Ever Upwards

The Rise And Rise Of Scala

A new year brings a new release of *Scala* – the best multimedia program on *any* platform. Gary Whiteley puts on his crampons and sets forth to scale the dizzy heights of *Scala MM300*.

SCAL(A)ING THE HEIGHTS

Scala MM300 is the latest version of the professional desktop video and presentation program which keeps pushing back the boundaries of what is possible on the Amiga. For those not yet enlightened to the world of *Scala*, here's a potted introduction.

Scala MM300 is a nine disk software set which includes a wide range of fonts, backgrounds and brushes for producing multimedia and desktop video presentations. It's like a visual word processor which allows easy choreographing of picture and text transitions (*Scala MM300* has 100 picture and over 80 text transitions). It gives you rapid text composition and scaling from either bitmapped or Bullet fonts. It also features an external control for genlocks, MIDI equipment, video decks, Laserdiscs, CDTV, the Canon Ion disk camera and a couple of 24-bit cards. Amiga music files and sounds can also be included in a presentation, as can animations.

THE GOOD

The best thing about *Scala MM300* is the number of new or upgraded features which have been incorporated. You'll find a condensed list in the "WHAT'S NEW" boxout but that only gives you the briefest details. So let's flesh out some of those features a bit more.

One of the bugbears of *MM200* was having to save backgrounds in different resolutions if they were required for both normal (e.g 640 x 512) or overscan (e.g 736 x 580) presentations. For direct displays, such as point of sale applications, it is often possible to use non-overscan resolutions (and hence use smaller image files), but for video work overscan is usually the only practical solution. The real trouble with *Scala MM200* was that saving the extra files took up extra storage space and required an image processing tool, or paint program, in order to rescale the image in the first place. *MM300* has fixed that problem. Backgrounds (and brushes too) can now be resized on the fly from just a single image source. Now it really is appropriate to talk about one size fitting all.

For video work, subtitles and captions are often necessary and there's frequently a need to put them on an opaque or semi-transparent background. Previously this had to be done with paint software, but a new feature now makes adding a background box automatic. As well as being colour-selectable, it has six levels of transparency available, making captioning and subtitling much more presentable.

Regarding the subtitles, *MM300* can now automatically generate them from any ASCII text file. This feature is still in need of some further refinement to make the layout more controllable though.

One particularly nice feature is the addition of three new drawing tools. Although limited to just **box**, **ellipse** and **line**, there are many jobs which will benefit immensely from them and the ease with which they can be applied. No longer is it necessary to rely on pre-made brushes that don't quite do the job, or skip back and forth between paint package and *Scala* while designing screens. Boxes can also have their edges bevelled automatically, giving them a smart appearance providing crisp, prominent, frames for text, graphics and buttons.

If you make interactive presentations which involve the user choosing options by pressing buttons, then you will find that making buttons has become both simpler and more powerful. Brushes can now be produced simply by clicking on an object or letter, or alternatively, by dragging out a box around the selected button area. This means that buttons no longer need be rectangular. Any object can in essence be chosen, including irregular shapes.

The old **Move** button is gone, because moving screen objects and text has been simplified to just clicking and dragging the selected object/s with the mouse. Believe me, this simple improvement on its own makes screen layout far more simple and straightforward.

Other significant graphical improvements include text crawling smoothly over backgrounds without disturbing them. Palettes can be remapped to produce the optimum set of colours. It is especially useful when you need to make a graphic from several different source components, each having differing palettes. Of course optimising the palette can't work miracles, but it is a great help for AGA Amigas.

Imported images can now be dithered (using the Floyd-Steinberg method) to offset any rescaling problems or reduction in the number of colours. It can be helpful in cases where only a few colours are being used. 24-bit images can be loaded in and 'previewed', allowing AGA users in particular to make the most of their machines. It's not a perfect solution in terms of speed since images are converted on the fly, but it certainly looks good and can be worked around if necessary.



Bevelled boxes, better antialiasing, text backgrounds and easy resizing all make Scala MM300 an even easier and more effective multimedia program to use.

A selection of new transitions can also be found (some of them very good indeed).and more text transitions have been included.

Moving away from graphics, music is now much more powerfully handled, especially from hard drive. A new spooler seamlessly plays back large MOD or 8SVX files. Sound samples can now be used when buttons are in operation (to provide audible clicks, for example), which enhances the *feel* of a presentation.

Music and graphics can all be more accurately synchronised using the new **Absolute** timing method. This method defines exactly how long each component will be displayed or heard, in hours, minutes, seconds and frames. This is different to the alternative **Relative** timing in that it is neither interactive, nor based upon relative values (what you enter is what you get). I'm speaking theoretically though since I haven't given *absolute timing* a thorough testing. It does have limits however, as images obviously cannot be changed faster than they can be loaded from RAM. Don't expect to be able to produce epilepsy-inducing rave visuals using absolute timings – use ANIMS instead. If, however, you need to time a set of titles or graphics to match a video, then absolute timing should do the trick. Coupled with optional SMPTE control (for example via an EX), *Scala* will jump back and forth between the pages as it follows the time code from the VCR or other device to which it is attached.

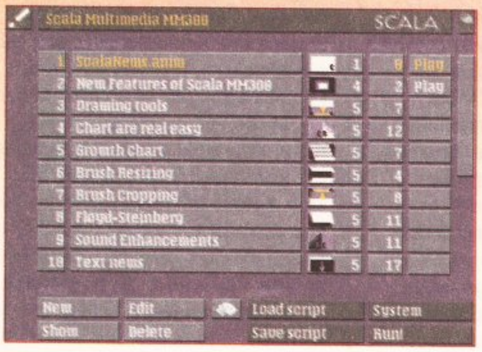
Talking of **EX**s (the *Scala* modules which communicate with external devices), both the MIDI and CDTV EXs have been improved. A new series of EXs have been included which offer control for more genlocks, including G2 and G-Lock models, and for GVP's IV-24 and Archos's AVideo cards. Other EXs, including control for professional VCRs, the Video Toaster, SunRize Studio 16 audio card, different image formats and more are also available as optional extras.

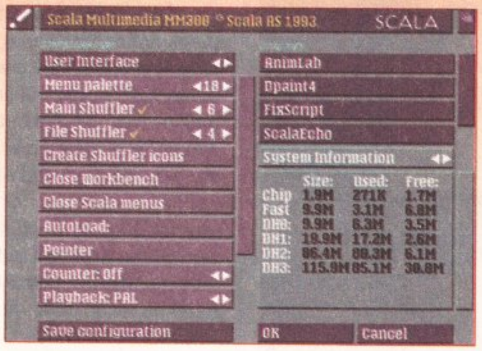
There's a lot more new stuff: little things like separate underlining for text, better (and faster) antialiasing, simpler operations, more flexible file requestors and other refinements. All of which makes *Scala MM300* the most streamlined version yet. It is a program that most other computer multimedia users will envy.

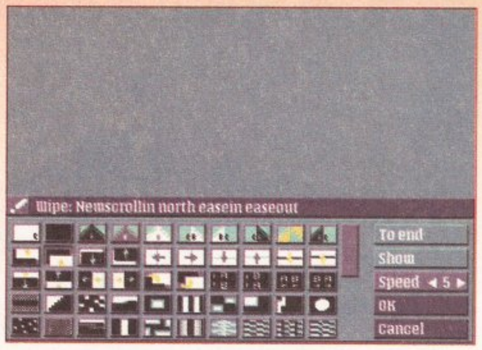
Scala MM300 is not all a bed of roses, which perhaps is inevitable with a program of such incredible depth, complexity and ease-of-use. No doubt, there are *some* rough

BEHIND SCALA'S MASK

There may not appear to have been many changes in the requesters and menus, but don't let appearances fool you. Scala has a new face hidden behind its old masks.







edges and room for improvement.

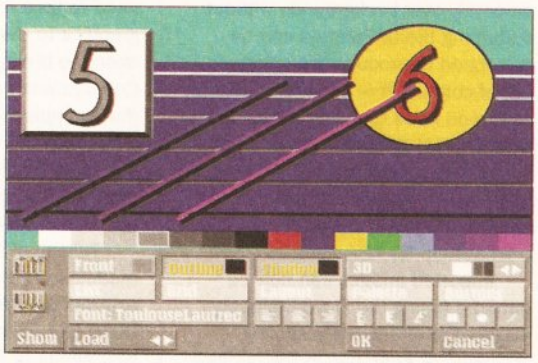
THE NOT SO GOOD

No matter how I try, I never seem to be able to get *Scala* to scroll properly. SCALA assured me it must by my test setup (Amiga 2000, 40MHz 68030, Opalvision, 2MB CHIP RAM, 10MB FAST RAM), but a couple of other users I spoke to weren't ecstatic about the scrolling either. Let's hope we're all wrong and that it really does work properly for everyone else.

I also experienced redraw glitches whilst preparing graphics pages. Consequently, I often found that I had to manually refresh the screen (using the F10 key) in order to restore the graphic to its correct form.

Another niggle was that when I saved screens as IFF images, they wouldn't load into *DPaint IV* unless I set the correct screen format before loading them (which isn't usually necessary). Strange, huh? It is probably a *DPaint*, not a *Scala*, problem though, since the images work fine in every other program I tried them with.

Still, these are all fairly minor troubles if you compare them with the fantastic overall power of *Scala MM300* and they are really likely to be testing or teething problems, so I'd take them with a pinch of salt if I were you.



New line, ellipse and box tools help add greater flexibility to impressive Scala presentations.

AND THE SUGGESTIONS

I found the lack of cut and paste functions for the new drawing tools very frustrating. I wanted to clone a bevelled box several times and looked for a cut and paste tool to let me do it easily. Bad news, cut and paste is for text.only. Duplication *is* possible by saving the object as a brush and reloading it as many times as required, a little long-winded compared with the rest of *Scala*'s time-saving features. PostScript font handling would be nice too, as would individual letter kerning. My most urgent wish is for an undo function that would make *Scala* graphics production *even easier*.

These criticisms are petty compared with the awesome power of *Scala MM300*. If you are a regular *Scala MM200* user, my advice is to upgrade immediately. If you want to do top-class multimedia work, buy *Scala* MM300. You won't regret it!

Requirements:
Any Amiga with a hard drive, AmigaDOS 2.04 or later and at least 3MB RAM. 1MB (or more) CHIP RAM and accelerator recommended.

IN BRIEF WHAT'S NEW?

- New drawing tools – boxes, ellipses and lines.
- Easy background and brush resizing.
- More wipes, backgrounds and EXs.
- Simplified move functions.
- Faster and easier button construction (including sound effects).
- Quick backgrounds for text and symbols.
- AGA support.
- Previews for 24-bit images.
- Dithering for better quality with less colours.
- Palette optimisation.
- Music spooled from hard drive.
- Text crawling over backdrops
- Absolute timing in hours, minutes, seconds and frames.
- More overscan modes.
- Better speed handling.
- Improved antialiasing.
- Easy subtitling.
- Split underlining.
- Extended AnimLab utility.

COMING SOON...

Additional *Scala* products, recently released or imminent, include:

Scala Echo EE100
Used in conjunction with *MM300*, *EE100* is a hardware and software combination offering domestic and semi-pro video editing with LANC and infrared equipped VCRs and camcorders, as well as the incorporation of *Scala* graphics. Expected price £149.

Scala VE500
Scala VE500 will be the big brother of EE100, providing professional video editing functions for high-end video decks, along with GPI triggers, control over Video Toaster or OpalVision video switchers, A/B roll editing and much more. The cost will be around £1600.

Art and Font Disks
A disk of 15 new and additional *Scala* fonts should now be available, as should two volumes of 24-bit JPEG backgrounds containing over 100 new backgrounds between them. They are all easily installed in any available IFF image format. Prices to be announced. AS

SHOPPING LIST

Scala MM300 by SCALA...£329
(Scala MM200 owners can upgrade for £200)

From Scala UK Ltd,
Mill Studio, Crane Mead,
Ware, Herts, SG12 9PY.
Tel: 0920 444294,
Fax:0920 444230.

CHECKOUT
PRODUCT NAME

Features
●●●●●●●●●●
Somehow *Scala* are still packing them in. What will they think of next?

Speed
●●●●●●●●●○
For full performance *MM300* requires a pretty powerful Amiga. But in general it beats the pants off all the competition.

Documentation
●●●●●●●●○○
The *MM300* documentation is provided as an adjunct to the original *MM200* manual. Unfortunately it doesn't cover all the new features in full depth (and neither do the provided readme files).

Ease of Use
●●●●●●●●●○
Not always as logical as it might be, and an undo function would be very handy, but overall *Scala* makes DTV and presentation work extremely easy to master.

Value for Money
●●●●●●●●○○
Better value with every new version.

Overall rating
●●●●●●●●●○
There's no doubt that *Scala* is the king of the presentation programs and it will take something very special to usurp its crown. Long live the king!

AMIGA VIDEO
from LOLA

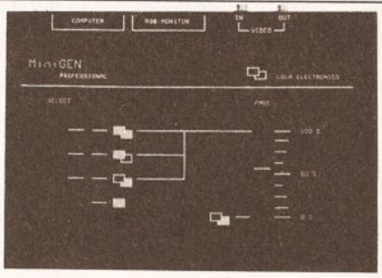
MINIGEN PROFESSIONAL GENLOCK

FREE P&P

combined GENLOCK, PAL ENCODER and SYNCHRONIZED OVERLAY KEYER CONTROLS **IN ONE UNIT**

MiniPRO L1000 *only* **£149.95**

CAMCORDER USER AWARD WINNER



CAMCORDER USER GOLD AWARD

Features:

- Crossfade slider • RGB through port • BNC Connectors
- Cable connection to Amiga - allows professional video desk layout
- Push button mode switching - allows live programming changes

Also available:

miniGEN genlock - the original and now even better value £53.95
L520 TV ADAPTER - modulator for A500 etc (includes Amiga/ TV Leads) £32.95
Accessories - L520 extension lead plus plus other video lead kits available

For information on all the above please write or phone

LOLA ELECTRONICS LTD.
FREE POST
MARKET HARBOROUGH
LEICESTERSHIRE LE16 7BR

☎ 0858 880182

All prices include VAT & P.P.

12 month guarantee, 14 day full refund. Designed and manufactured in the U.K.

Nexus Pro™

Background Picture Sets

High quality AGA Colour IFF Pictures, perfect for videotitling! Work in all Amiga Paint and Presentation packages (DPaint, Scala, etc.)
(Also available for Pre-AGA Amigas on request)

Set One: Papers
Various paper types, including parchments, marbled, embossed.

Set Two: Fabrics
Varied fabric backgrounds including silks, cottons, leather, etc.

Set Three: Textures
Various textures including woods, stonework, etc.

Set Four: Travel
Including famous landmarks from around the world, perfect for use as chromakeyed backgrounds or for holiday video title backgrounds.

Set Five: Weddings and First Communions
Including parchment, scrolls, flowers, romantic backgrounds, etc

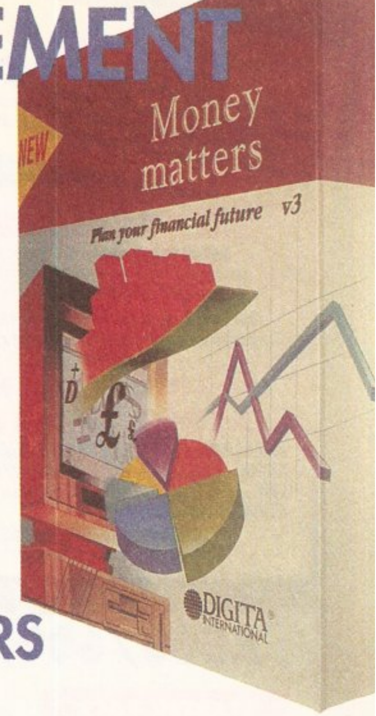
Set Six: Introduction Pack
A compilation from the previous sets, ideal for new users.

Each 10 disk set is available at a cost of only £35.00 inc P & P. or buy the whole range for only £149.00

Send cheque or postal order made payable to:
VIDEOWORLD, 8 Ardoch Gardens, Glasgow G72 8HB.
Telephone 041 641 1142 for more information.

Access VISA

EASY MONEY MANAGEMENT



FOR HOME AND SMALL BUSINESS

BECAUSE
MONEY MATTERS

Working out personal finances has always been a chore everyone dreads at the end of the month.

We should know.

Since 1988 more than 50,000 users have come to rely on Digita® financial software. Using this experience we created new Money Matters™ 3, our best financial manager yet.

Money Matters is ideal for all types of accounting, home or business, and will keep track of your finances. With optional budgeting, charting and forecasting, Money Matters also handles standing orders and direct debits, automatically warning if, for example, bank charges are likely, or if you have exceeded your credit card limit.

Money Matters costs £49.99, which includes VAT and packing. If you already use financial software, you can trade up for just £29.99. For more information call 0395 270273, or write to Digita, FREEPOST Exmouth EX8 2YZ ENGLAND.

Money matters

– A MEMBER OF THE DIGITA GROUP –
Digita and the Digita logo are registered trademarks, and Money Matters is a trademark of Digita Holdings Ltd. All other trademarks used in the text of this advert are the properties of their respective companies. Whilst every care has been taken to ensure that the information provided in this advert is accurate, Digita Holdings Ltd and any associated company cannot be held liable for any errors or omissions that may have occurred. Sold subject to standard conditions of sale. E and OE.

TRADE UP FOR JUST **29.99**

DIGITA INTERNATIONAL®

Hobbyte

COMPUTING
ESTABLISHED 9 YEARS

10 MARKET PLACE
ST ALBANS HERTS AL3 5DG
TEL: (0727) 856005/841396

WARNING

Due to the exchange rate, or manufacturer's changes or due to current RAM shortage, some prices may alter, either up or down, during the several weeks between going to press and the end of the month of issue. We would ask that prices be confirmed by telephone before ordering.

HOW TO USE THIS AD

Exclusively from Hobbyte, you can choose your own Amiga and software combination and still benefit from the huge savings only available from package deals. Want an A600 pack for small children? No problem! A professional pack for music or programming? It's up to you!

WE WANT TO BEAT ALL PRICES!

CALL US!!

OLD AMIGA TRADE-IN*

The best trade-in allowance, extra for peripherals and accessories. Trade in your old machine for a brand new A600/1200/4000/CD32 or even a PC.

After trade-in, equipment is checked and refurbished by our engineers and is then offered at bargain prices, complete with 3 months warranty.

A500s FROM £139
A1500s FROM £199

A600 SD/HD	from 159	HDs + Controllers	from 179
A3000s	from 499	GVP HD8 40/52	209/229
CDTV	179	XT/AT BBoard	50/91
A590 20/40MB	129/159		

OTHER ACCESSORIES - PLEASE ASK.

*Acceptance of pre-V2 machines may be limited

CD32 CONSOLE

SPECIAL

Choose any* 3 CD discs (see software section) for **£59.90** *up to £34.99 RRP each

CD32 SOFTWARE

Over 75 titles specially written for the CD32 should be in stock (phone for list), inc. Syndicate, Zool 2, Jurassic Park, Chaos Engine, many of which include a full CD music track alongside the game. About half of existing CDTV titles are compatible. CD32 will also play normal music CDs and CD+G discs

CD32 Console (with Oscar AGA, Wing Commander, Dangerous Streets, Diggers +Joypad FREE) **£279**

CD32 + FMV Card as above PLUS FREE MUSIC VIDEO DISC **£465**

CD32 Standard warranty is 12 months return to base.
12 months on-site warranty £39.99
Extra 2yrs on-site warranty £69.99

AVAILABLE NOW!

Full Motion Video module for CD32 (with Free Music Video Disc) £189.99

COMING SOON

Floppy drive, Keyboard, Mouse CD32 for A1200

A4000/ 30 & 40

A4000/30: AGA Chip Set + 68030 processor, 68882 25/50 MHz co-processor option, 256,000 colours from 16.6M, scan doubling for flicker free display, Mouse, Amiga 3.5"/1.76 MB 3.5" drive, Hard Drive as below, Amiga DOS 3.0 system and utilities, **Next day on-site warranty**

A4000/40: As above, but featuring the blistering 68040 processor, with full floating point facilities **NOT** EC version. UK models with on-site warranty...**NOT** imports!

TRADE IN AVAILABLE

WARNING PRICE CHANGE IMMINENT PLEASE CHECK!

HD SIZE MB	A4000/30 1+1MB SUBTRACT £70	A4000/30 2+2MB STANDARD VERSION	A4000/30 2+4MB SUPER EXP. VERSION	A4000/40 2+4MB	EXTRAS
80	WARNING - 1 + 1MB A4000s will not run most serious AGA s/w packages. If required, subtract £70 from 2+2MB prices	965	ADD £80 • ADD £80 • ADD £80 2 + 4 MB version comes with 2MB chip RAM + one 4MB chip of fast RAM, for on-board expansion to 16MB. We do not fit two x 2MB chips of fast RAM, which gives on-board expansion of only 8MB.	1889	Extra 2MB for 2+2 versions £99 • Extra 4MB for 2+4 versions £159 • Microvitec Cubscan 1440 recommended £399.99 • Same day warranty £39.99, extra 2 yrs £99.99
120		1039		1915	
160		1079 SPECIAL		1959	
240		1149		2139	
340		1219		2299	
540		1479		2459	

A4000/30 CO-PROs
68882 25 MHz..........ADD £79
68882 50MHz..........ADD £159
Fitting FOC if purchasing A4000

A500/600/CDTV

STARTER PACK

A Must for new users!
Microswitched joystick, 10 Blank discs, 80 capacity lockable disc box, mouse mat, dust cover, Virus Killer.

A500+ and A600s come complete with mouse, modulator to connect to TV, or monitor lead as required, all cables, manuals, operating discs and utilities

REFURBISHED UNITS ONLY AVAILABLE

	INCLUDED AS STANDARD	ALONE £	PLUS STARTER £	WARRANTY	EXTRAS
A500+ 1MB	-	179.99	194.99	12 months return to base	Extra 1MB £25
A500+ CARTOON CLASSICS	Captain Planet, Lemmings, The Simpsons, DPaint III*	194.99	209.99		
A600 SD WILD, WEIRD AND WICKED	- Silly putty, F1 Grand Prix, Pushover, Deluxe paint III*, 700 clip art set	194.99	209.99	12 months at home	Extra 1MB £35 • 2Mb PCMCIA £109 4MB PCMCIA £169 • Romsharer £45
A600 HD 20		269.99	284.99		
40		319.90	334.90		
EPIC PACK PLUS 64	Epic, Rome, Myth, Trivial Pursuit, Amiga Text, Deluxe Paint III*, 700 clip art set	349.99	364.99		
85		389.99	404.99		
A600 HD 80	-	365.99	379.99	12 months return base	
120		415.99	429.99		
210		569.99	584.99		
CDTV MULTI MEDIA	Audio Discs/ CD Player, Keyb'd, Fdrive, Mouse, Remote Controller, Caddy, Welcome Disc, Fish Disc	229.99	244.99		Brickette £45
CBM 1084 SD	+ Leads	199.90		1 year	PiP Monitor to TV Converter – £99
CBM 1942	Leads. Ideal for AGA	339.99		1 year	
Philips 8833 II	Leads. T & Swivel £10	209.99		1 year at home	
Star LC100C	Top Value 9 pin colour printer	149.99	159.99	1year	
Citizen 240C	24Pin colour	252.90	262.90	2 year	

Return to base HD versions are SD units fitted with top quality 3rd party drives and come with install disc + full documentation. *DPIII needs 2MB for animation on HD models.

WITH ANY COMPUTER

CHAOS ENGINE, SYNDICATE, PINBALL FANTASIES, NICK FALDO'S CHALLENGE GOLF
ADD £19.99
OR LEMMINGS, SIMPSONS, CAPTAIN PLANET, PLUS D PAINT III & GFA BASIC
ADD £14.95

A1200

1200 2MB	269
1200 +20MB HD	379
1200 +60MB HD	439
1200 +80MB HD	469
1200 +120MB HD	509
1200 +207MB HD	549
Extra 4MB + clock fitted	ADD £200

**CBM APPROVED HARD DRIVES
Full legal installation/utility disc and documentation and come with CBM on-site warranty service.

DON'T FORGET YOUR STARTER PACK! ADD £15 (SEE VALUE PACKS BELOW)

FREE WITH ALL 1200s

NIGEL MANSELL AGA, TROLLS AGA AND COMPILATION PACK
4 (top games)
OR DESKTOP DYNAMITE PACK
Wordsworth 2 AGA, Deluxe Paint 4 AGA, Oscar AGA + Dennis, Print Manager
PLUS
4 hot list titles
ADD £49
(1200s only)

SPECIAL

Citizen ABC 24 pin colour printer with sheetfeeder and Starter Pack ....ONLY £180

HOBBYTE VALUE PACKS

Hobbyte are famous for their packs, allowing you to choose what you want, whilst still benefitting from package deal savings. Remember, a bargain is only a bargain when you like what you get! So, if you aren't Wild, Weird or Wicked, Sleepwalker sends you to sleep, Space Ace leaves you feeeling empty, Paradroid does worse, if Basic basically isn't you, exercise your options and get real value for money from Hobbyte

TRAMPY'S AND NODDY'S PACK

Fun and educational for 2 to 11 years
(Some help may be required)

SPECIAL WITH AMIGA £39 | ALONE £59

Noddy's Playtime OR Big Adventure	8 magical learning games at 3 levels, PLUS Junior Art pack, keyboard overlay and map
OR Merlins Maths	6 National Curriculum oriented games, stage 2, 7 to 11
The Shoe People	6 games with Trampy and friends, 6 years and under.
OR Fun School 2	The "Fun School" suite have won every award going. 5/6 wonderful animated games. 3 to 11 years, specify age.
Fun School 3 or 4 OR ADI Jnr Reading OR Counting	The loveable extra terrestrial entertains 4 - 7 year olds and helps towards achieving National Curriculum levels 1, 2+ 3
Deluxe Paint II + 700 Clip Art pics	Pics inc. children, Fairytale + Legend characters, Sport, Cartoons, etc.
Hobbyte Primary Educational PD Pack	Containing 10 fun while you learn games
Hobbyte 30 Easy Children's Games Pack	Simple games, or those with very easy levels. Even the youngest will be able to use some of these

SERIOUS USER'S PACK

Interested in music, programming and graphics? Then this pack is for you!

WITH AMIGA £39 | ALONE £49

Easy Amos	THE programming language. Wonderful manual is simple and entertaining - ideal for complete novices
OR AMOS Professional ADD £10 for this option	97% AF rating - the second highest rating EVER given. Learn to professionally create your own games, utilities. Loads of sample progs included
Hobbyte AMOS PD Greats	Dozens of utilities, Protracker music modules, example programmes that no AMOS programmer would be without.
Deluxe Paint III, plus 700 Clip Art pics	Create your own designs to incorporate into your AMOS progs
MIDI Recording Studio & MIDI Interface	If you have a MIDI instrument, this is everything you need to compose and edit your music
OR AmigaVision	Powerful presentation and production tool

STARTER PACK

A must for new users! All you need in one value pack

WITH AMIGA £15 | ALONE £25

10 blank discs	Make working copies of Workbench and other original applications discs as soon as you get them
Virus Killer	Check discs regularly, especially if sharing with friends
Mouse mat	Helps prevent dirt/dust collecting on mouse contacts

Plus Microswitched Joystick, 80 cap. lockable disc box, Dust Cover

HOT BUG GAMES PACK

The top-selling Hobbyte Hot Lot pack now includes the ultimate joystick !!!

WITH AMIGA £44 | ALONE £59

"THE BUG"	The only joystick ever to be given a Gold rating 92% AF, positive single-handed action, small and lovely!
10 "Hot List" Games The GREATEST!	See listing to the right for current HOT LIST, or phone for latest changes. Children's games available.
80 Prog. Hobbyte PD Greats Pack II 10 blank discs, mouse mat, 80 capacity lockable disc box, plus dust cover	Includes top games like Battlecars, Star Trek, Computer Conflict, Megaball, dozens of arcade classics, board classics and 'shoot-em-ups', Utilities, Word Processor, Spreadsheet, Database + Desktop Publisher and the ultimate virus killers - a must for every Amiga owner!

HOME APPLICATION PACK

Perfect for all Home Office needs

SPECIAL WITH AMIGA £39 | ALONE £55

Virus Killer Disk,
80 Prog. Hobbyte PD Greats Pack - see 'Hottest Lot Pack'
The Works Platinum — WP with UK spell chck, Thesaurus spreadsheet, 'Sideways' utility, database, graphics + comms module
Deluxe Paint III* with animation + 700 Clip Art pics
Digita Home Accounts — Keep track of credit card and bank accounts, budgets, etc
Any Two Hot List Titles

THE HOT LIST

GREAT individual packaged games BETTER THAN THE REST !!
(previous RRPs up to £39.99 each)

ANY 10 £29.99

Or see packs across

- Thunderbirds (7yrs+) ‡ - 92%
- Silly Putty - 90%+ lots of mag
- Elf/Toki/Puzznic (counts as 2)
- Paperboy II ‡
- Die Hard 2
- Colossus Chess @
- Challenge Golf
- Battleships classic board game
- Graeme Souness Soccer
- Neighbours
- Frankenstein ‡ @
- Captain Planet
- Silkworm Helicopter @ 93%
- Tag Team Wrestling
- Edd the Duck ‡
- Stack Up ‡
- Lemmings 92% AF
- Round the Bend ‡
- Fist Fighter
- Sporting Triangles
- World Cricket
- Bart Simpson
- Spiderman/Cptn America ‡
- Arcade Trivia
- Xenon - C+VG Game of the Mo
- Blade Warrior - A Power, AF, AA superb reviews
- Arnie

AWARD WINNERS
Space Ace, Kick Off, PipeMania, Po (counts as 2)

‡ PARTICULARLY SUITABLE FOR CHILDREN (MAY NEED HELP)
@ NOT A1200 COMPATIBLE
TITLES MAY VARY

STOP PRESS! DESKTOP DYNAMITE AGA PACK (SEE 1200 BOX) £79 ALONE

*DPIII needs 2MB for animation on HD

NO OTHER DEALER CAN BEAT OUR CREDENTIALS

- Multi-million company with 9 years experience in Commodore product and here to stay
- Commodore trained staff are friendly and helpful and are parents, multimedia, educational, games, programming or technical specialists (usually more than one!)
- Open 9-6 pm Monday to Saturday and 10.00 am to 4.30 pm Sundays PLUS December late nights on Thursdays (St Albans only) for convenient shopping.
- Callers welcome for advice and demonstration at our 1600+ sq ft High St, Town Centre branches
- Same day despatch for most orders received by 5.30 pm; express am and Saturday services available
- Hardware carefully handled and delivered safely and reliably by caged, insured, top name courier service
- Pre-despatch testing on Amiga systems
- Free 30 day courier collection and delivery of NEW replacement.(except product with on-site maintenance)
- Hotline support and in-house engineers
- Upgrade and trade in offers to keep you up to date
- Exceptional after sales service
- BFPO and export welcome

NOT JUST ANOTHER MAIL ORDER COMPANY

For years a major player in Amiga Mail Order, Hobbyte also boast extensive expertise and experience in specification and support of multi-machine and specialist systems. Hobbyte have been recommended and trained by Commodore and successfully won major orders and support contracts from London Boroughs, MOD, educational establishments etc. We are pleased to be placed on tender lists.
This expertise is available to all our customers.

• AMIGA SPECIALISTS • STAR GOLD DEALER • CDTV CENTRE • PHILIPS APPOINTED DEALER

MONITORS/ACCESSORIES

CBM 1084SD 1084/1085 + leads	194.90
Tilt + swivel stand for any 14" monitor	12.99
CBM 1942 dual sync .28 dpi AGA monitor + speakers	339.90
MICROVITEC CUB-SCAN 1440 14" .28dp for 1200/4000, in-finately variable scan rates between 15KHz (default on boot-up) and 40 KHz for all AGA modes in this range. With tilt and swivwl stand. **"CUA BEST BUY"**	399.99
Microvitec Cub-scan .28dp for 1200/4000 as above, but 20"	1039.99
Microvitec Cub-scan .1782, 17", .27dp, 29-82 KHz horiz. scan	889.99
Adaptor for A1200/Microvitec	29.99
CBM 1936 Hi-res SVGA .28dp inc. tilt & swivel	259.99
Panasonic 1537 31-62kHz 14"	519.90
Philips Brilliance 2110 21"	1790.90
Zy-Fi Speakers	37.90
Zy-Fi Pro Speakers	57.90

FLOPPY DRIVES

Zydec 3.5 external drive, daisychain + on/off	51.50
Cumana CAX 354 3.5 external drive, beige	56.50
PC 880B with anti click + Blitz back up and virus protector, Cyclone compatible	75.99
Dual drive as PC 880B	124.99
High density 1.76MB ext. drive for any Amiga (WB 2)	98.50
High density 1.76MB ext. drive for any Amiga (WB 2) + 10 HD Discs	104.95
Power HD internal floppy for 1500/2/3 4000	94.90
Power HD internal floppy for500/600/1200	94.90
A500 replacement internal floppy	54.99
A600/1200 replacement internal floppy	69.99

HARD DRIVES/ACCELERATORS

1500/2000

GVP HC8/80MB	239.99
GVP HC8/120MB	289.99
GVP HC8/170MB	319.99
GVP HC8/270MB	379.99
G Force 030 40MHZ 4MB	564.99
G Force 040 33MHZ 4MB	999.99
Extra 2MB for above	POA
Trifecta SCSI 80MB HD	234.90

3000/4000

Fastlane SCSI II controller for 4000	299.90
DKB 40981 SCSI II	269.99
128MB int. SCSI optical drive	599.90
128MB discs for above	34.95
A4000 80MB	119.99
A4000 130MB	179.99
A4000 170MB	199.99
A4000 260MB	239.99
A4000 340MB	299.99
A4000 540MB	599.99
128MB int. optical SCSI drive	599.90
Self fitting - fitting by our engineers ADD	£15

500

A530 1MB 40MB	392.00
A530 1MB 80MB	489.00
A530 1MB 120MB	589.99
A530 1MB 213MB	693.99
A530 68882	218.99
GVP HD8 80MB	249.99
GVP HD8 120MB	299.99
GVP HD8 170MB	329.99
GVP HD8 270MB	389.99
SOME HD8 REFURBS AVAILABLE	FROM £169
A590 20MB	139.90
A500 Internal 20MB HD	184.99
A500 Internal 60MB HD	249.99
A500 Internal 80MB HD	279.99
A500 Internal 120MB HD	339.99
Trifecta SCSI 80MB HD	289.99
A570 for 2.04 1MB 500 + *FREE* Fred Fish & Hutchinsons Encyclopaedia	98.90

A600/1200

GVP 85 MB HD 600/1200 EN	274.99
GVP 1230 030 accel for 1200	239.90
GVP1230/40MHZ/4MB 68882 Co-Pro for 1200	479.99
M1230 II 40MHz	239.90
M1230 II 40MHz 4MB	499.99
M1230 II 50MHz 4MB +MNU	559.99
Microbotics VXL30 25MHz	219.99
VXL 30 40MHz	339.99
128MB int. optical SCSI drive	599.90
Disc for above	34.95

A600/1200 HD UPGRADES

	SELF FITTING* (on-site invalidated)	CBM APPROVED FITTING** (with on-site)
20MB	89.99	-
60MB	149.99	199.00
80/85MB	189.99	239.00
120/127MB	229.99	279.00
170MB	269.99	319.00
240/250MB	329.00	499.00
INTERNAL CLOCK		POA

*with cable & disc ADD £14.99 for Hobbyte fitting
**Including FREE courier collection & delivery

1200 OVERDRIVE EXTERNAL HDs

Overdrive 35 NO HD	139.50
Overdrive 35 80MB HD	237.50
Overdrive 35 170MB HD	317.50
Overdrive 35 220/260MB HD	337.50
Overdrive 35 340MB HD	417.50
Overdrive 35 540MB HD	POA

AMIGA 24 BIT HARDWARE

TOASTER COMING SOON!

DCTV	376.99
GVP IV + VIU-S	965.99
GVP IV + VIU-CT	1255.99
Impact Vision 24	POA

HARLEQUIN 32 BIT FRAMEMAKER BOARD

- **16.7 million colour** photo realistic display • **real time 24 bit animation**
- **Optional Alpha Channel** - superimpose high quality graphics onto live signal, or smoothly blend paint images • **Optional Double Buffering** - 2, 24 bit displays instantly available

SUPPORTS: TV Paint, Vlab, Calligari, Sympatica, Ad Pro, Real 3D + others

H1500 1.5MB	£929	*H2000 Plus	£1479
H2000 2MB + Alpha	£999	*H4000 Plus	£1579
H3000 3MB +D/Buffer	£1099	**FREE V lab Framegrabber with Harlequin Plus**	
H4000 4MB + Alpha +D/Buffer	£1279		
Genlock	£199	*Plus versions inc, Genlock, extra screen resolutions + modes, 4 Alpha Chanel + more	

AMAZING PRICE!

PICASSO 24 BIT GRAPHICS CARD + FREE Personal Paint Card Lite **£324.99**

PICCOLO 24 BIT GRAPHICS CARD
16.7 million colours, on-board blitter, IMB exp to 2MB video RAM, fully programmable resolution, double buffering + multiple screen + AREXX. support. Supports leading graphics packages/applications. With FREE TV Paint Jnr **£379.99**

RAINBOW III 24 BIT GRAPHICS CARD + VIDEO CONTROLLER **£1489.99**
Similar to Piccolo but with 4MB video RAM, programmable resolution to 1600 x 1280, built -in video controller inc. 110MHz clock. With FREE TV Paint Jnr.

PEGGY MPEG VIDEO CARD **£479.99**
Take 24 bit animations from disc or other storage devices and replay in real-time through the Amiga! Use integrated genlock to overlay Amiga graphics for sophisticated titling and special effects, to produce stunning promotional/training videos, or games with live video footage. Near SVHS quality, 16.7M colours, MPEG tools + library functions, 25 frames/sec playback.

YC Output module for Peggy	£129.99
MPeg encoder option for Peggy	£349.99

OPAL VISION (for 3000/4000)
24 bit board v2+ Opal Paint, Opal Presents, Opal Hotkey, Opal AminMATE .. **£325.00**
IF YOU HAVE PURCHASED OPALVISION, YOU MAY HAVE RECEIVED VOUCHERS AGAINST THE FOLLOWING NEW PRODUCTS., WHICH WILL BE ACCEPTED BY HOBBYTE IN PART PAYMENT

Video Processor for Opal Vision WITH VOUCHERS	647.99
Video Suite for Opal Vision WITH VOUCHERS	647.99
Scan Rate Converter for OpalVision WITH VOUCHERS	647.99
Retina 24 bit graphics card + 1MB + VD Paint	329.00
Retina 24 bit graphics card + 2MB + VD Paint	395.00
Retina 24 bit graphics card + 4MB + VD Paint	489.00
V lab 24 bit real time digitiser 1200/600/500 ext	334.99
V lab 24 bit real time digitiser 1500/3000/4000 int	289.99
V Lab 4000/3000 int SVHS	334.99

FREE V lab Framegrabber with Harlequin (see above)

EMULATION

G Gate 386sx 25MHz	POA	386/486 Bridgeboard	POA
GVP 40/4 for 1500	945.99	Emplant	245.90
AT Once	214.99	Emplant Deluxe	339.90

SCANNERS & DIGITISERS

Epson GT 6500, 600dpi 24 bit A4 inc. ASDG Scan s/w + cable	689.00
Epson GT 8000, 800dpi 24 bit A4 inc. ASDG Scan s/w + cable	889.90
Power Hand Scanner, 400 dpi, 64 Greyscale, V3 Powerscan software	98.90
Power Hand Scanner 4 256 Greyscale + s/w	118.99
OCR software for Power Scanner	48.50
Power Colour Hand Scanner V4	238.49
Sharp JX 100 A6 Scanner + scanlab s/w up to 18 bit	469.99
Summa Sketch II A4 with s/w/A3 Tablet Digitiser	359.99/529.99

GENLOCKS/MODEMS

Rendale 8802 (1200 compat)	139.99	Video Pilot v330	1094.94
Rendale 8802 FMC	159.95	Rocgen+ 1200 compat	158.50
Rendale 8802 SVHS/8860	469.99	Rocgen Rockey	119.50
Hama Genlock 292	283.90	Supra 2400 Modem	78.95
Hama Genlock S290	689.99		
GVP G-Lock	283.90	Supra Fax Modem	148.90

SUPRA 2400+ FAX/MODEM

With 9600 Fax, 2400 Data Fax Software, Atalk 3 Comms S/W, Modem Leads & Power supply **£148.99**

SUPRA 14440 FAX/MODEM

As above, but up to 14,400 Fax/Data **£279.00**
Rocgen plus Rockey Bundle **£239.90**

ACCESSORIES & DISCS

A500/600/1200 printer centre	28.99	Alien/Batman/T2 Joystick	10.99
A500/1200 control centre	34.90	Bug Joystick	11.99
A600 control centre	27.90	CDTV Keyboard	54.99
Brickette CDTV Joystick adapt.	39.99	Zy-Fi Speakers	37.90
10 Blank DS/DD discs in box	4.99	Zy-Fi Pro Speakers	57.90
10 Blank DS/HD discs	6.99	50 Blank DS/DD discs	17.99
A520 Modulator	29.99	50 Blank DS/HD discs	27.99
		Disc Expander	34.90

EXPANSION

A500 512k Ram Exp+Clock	21.99	MBX 1200 bare	64.90
A500+ 1MB exp.	29.99	MBX 1200 2MB	134.90
A500+ 2MB, exp. to 8MB	149.99	MBX 1200 4MB	194.90
A601	37.99	MBX 1200 8MB	379.90
A600/1200 2MB exp (card)	115.99	Amitech Hawk + clock 2MB	133.50
A600/1200 4MB exp (card)	169.99	Amitech Hawk + clock 4MB	193.50
CDTV 1MB exp + Super Agnus	157.99	Amitech Hawk + clock 8MB	396.50
A500 Rom Sharer 1.3	37.95	see below for FPU's	
A500 Rom Sharer 2.04	38.95	68882 25MHz for MBX/1208/Hawk	79.90
A600 Rom Sharer + 1.3	49.95	68882 33MHz + crystal	95.00
A2065 Ethernet Card	229.95	68882 40MHz + crystal	129.00
PC 1208 bare + clock	65.90	68882 50MHz for MBX/1208/Hawk	159.90
PC 1208 2MB	137.90	CBM 2.1 upgrade kit	74.99
PC 1208 4MB	197.90	**Chip fitting and board upgrade avail., by our qualified engineers**	POA
PC 1208 8MB	396.90		

PRINTERS

2YR WARRANTY WITH CITIZEN

	ALONE	WITH STARTER PACK
Citizen 120+D	111.99	ADD £12.99
Star LC20	119.90	
Citizen 90 mono*	144.49	
Citizen 90 colour*	154.49	
Star LC 100 9 pin col	149.99	
Star LC200 col	184.99	
Star LC 24-20 II	218.49	
Star LC 24-100 24 pin	173.49	
Star LC 24-200	209.99	
Star LC 24-200 col	248.49	
Panasonic KXP 2123 col	179.99	
Epson LQ 100	179.99	
Epson LQ 570	249.90	
Epson LQ 870	469.90	
Epson LQ 1170	569.90	
Citizen ABC Mono	143.99	
Citizen ABC 24 pin col +s/feed.	159.99	
Citizen S200 24*	184.99	
Citizen S200 24 col*	199.99	
Citizen S240*	219.99	
Citizen S240C col*	233.90	
Citizen S24x col*	325.90	
Star LC24 - 30 Col	218.90	
Star LC24 - 300 Col	275.90	
Citizen col Note. Printer II	269.90	

Starter pack: 500 Sheets A4 paper, Amiga to printer lead, Universal Printer Stand & Driver
* with Print Manager

	ALONE	WITH STARTER PACK
UNBELIEVABLE INKJET PRICES!!		ADD £12.99
HP Deskjet 310	229.00	
HP Deskjet 310 colour	269.99	
Epson Stylus 800	259.90	
Citizen Projet II	228.90	
HP Deskjet 510	249.90	
HP Deskjet 500col§	319.99	
HP Deskjet 550C§	459.90	
HP Deskjet 1200C	1249.90	
Canon BJ10SX Port	189.99	
Canon BJ 200	295.90	
Canon BJ 230 A3	339.90	
Canon BJ 330 A3	449.90	
Canon BJ 300	399.90	
Canon BJC 600 Col	539.90	
Star SJ 48	198.99	
Star SJ 144	419.90	
LOWEST PRICE LASER QUALITY OKI OL 400e LASER	489.90	
Panasonic KXP 4410	539.90	
Panasonic KXP 4430	659.90	
Star LS 5 laser	569.90	
HP Laserjet 4L	569.90	
HP Laserjet 4	1289.90	
Star LS 5ex 5ppm 2 bin	629.90	
Sharp JX 9500 9ppm	599.50	

PRIMERA COLOUR PRINTER

If you've admired the saturated colours of the Mitsubishi and other thermal wax printers at exhibitions, but couldn't afford the £4000+ price tag, the Fargo Primera is the printer you're looking for. Less than a third of the price of the nearest rival,

Primera offers:
- Photo-quality, rich bright colours
- Cost per page less than ink jet.
- Up to 4 times faster than ink jet
- A4, transparencies + T-shirt transfer paper printing

COMPLETE WITH AMIGA DRIVER (WINDOWS OR MAC DRIVER IF PREFERRED) AND AMIGA LEAD **£799.00**
PHOTO REALISTIC KIT **£209.00**

§Studio driver/Utility (WB 2 & above) highly recommended ADD £39.95

SOFTWARE

GRAPHICS/CAD

Aladin 4D	213.99
AmigaVision	17.90
Art Expression AGA	134.90
Art Dept. Pro 2.3A	129.90
AdPro Prof Conversion	48.99
Brilliance	133.90
SPECIAL £140 OFF Caligari 24	94.90
Caligari Broadcast 3	396.90
Cine Morph	29.99
Deluxe Paint IV	53.99
Deluxe Paint AGA	59.90
Disney Animation	56.90
Distant Suns	49.49
Essence	44.50
Expert Draw	39.90
Gallery	39.49
Helm	89.90
Image FX V1.5	187.90
Imagine v2	149.99
Image Master AGA	139.90
IntroCAD Plus	46.99
Morph +	138.99
Pixel 3D Pro	59.90
ProDraw 3	59.90
ProDraw 4 AGA	POA
Real 3D Classic	78.90
Real 3D v2	374.50
Scala 500 HVT	64.49
Scala Pro MM210	137.90
Scala MM200 Supp. (AVAIL NOV)	274.99
Scala Pro MM300	322.90
Sculpt Anim.4D	198.99
Spectra Colour	57.99
SYMPATICA II h/ware	329.99
Software only	189.99
Take 2	36.90
TV Paint 24 V2.0	169.90
TV Paint Junior	179.99
Vista Pro 3	49.99
Vista Makepath	24.99
X CAD 2000	90.50
X CAD 3000	249.99
X CAD 2 to 3 upgrade	149.99

VIDEO PROD/ TITLING

A Video + TV Paint V2	588.90
Adorage	48.50
AmigaVision	17.90
Broadcast Titler High Res.	138.90
NEW-Broadcast Titler AGA Super High res	139.99
Broad T Font Enhancer	POA
Broad T Font Pack	POA
Deluxe Photolab	51.49
Frame Machine	329.90
Deluxe Photolab	51.49
imagemaster	159.99
Montage 24 AGA	POA
Morph+	138.99
Pro Video Plus	137.99
Scenery Anim 4	48.90
Scroller II	59.99
TV Record	189.99
TV Show Pro	51.39
TV Text Pro	79.50
Video Studio 3	115.95
Video Director	118.90
Video Effects 3D	POA
Video Master	49.49
Vidi Amiga 12 V2	74.50
VIDI OFFER - Vidi Amiga 12 with Megamix Master	£97.90
Vidi 12 Real Time	154.50
Vidi 24 Real Time	224.50
Video Timelapse VTL - creates stunning timelapse sequences - flowers opening, clouds, with sophisticated light/motion etc., record trigger inc. deck controller h/ware	329.90
Software only	189.99

EDUCATIONAL

Any Fun School 3 or4	15.99
Any ADI	16.99
Merlin's Maths	16.99
Paint & Create	16.99
Spelling Fair	16.99
Any Noddy	16.99

See also software packs

UTILITIES/LANGUAGES

AMAX II Plus	249.99
Ami back + A Tools	59.99
Amos 3D	21.49
Amos the Creator	30.95
Amos Compiler	19.49
Amos Prof.	32.99
Amos Prof. Compiler	24.99
Easy Amos	22.49
Blitz Basic 2	48.90
CanDo 2.5	93.50
Cross Dos v5	29.75
CygnusEd Pro 3.5	69.75
Directory Opus 4	43.90
GB Route +	32.50
Gigamem	47.50
SAS/Lattice C	229.99
Quarter back V6	48.50
Quarter back Tools Deluxe	59.99
PEGGER - Vital for graphics-users!	79.95
True Print 24	47.90
Xcopy Pro	31.50

PEGGER - Fully integrated JPEG utility gives enormous hard disc space savings - 100MB of framestores will compress to under 10MB. 'Snoop' gives JPEG capability to programmes that don't otherwise support JPEG, such as DPAINT IV AGA, so they can load + save JPEG files. Amiga DOS 2 and 3 compatible AREXX, 24 bit IFF, DCTV, Toaster and Ham 8 Support. Fast, seamless background operation

VIDEO TAPE BACKUP UTILITY £57.50
Backup upto 120MB onto one 3 hour tape

APPLICATION

Arena Accounts	82.50
Excellence 3	89.90
Final Copy V2	63.99
Final Writer	99.90
Hone Accounts 2	48.90
Kind Words III	17.90
Maxiplan Plus v4	17.90
Mini Office	37.49
Money Matters	46.99
Pagestream 2.22	62.90
Pagestream v3	219.90
AF GOLD WINNER Pagesetter 3 AGA	41.90
Pen Pal 1.5	28.50
Pers Finance Man +	29.50
Professional Page 4.1 AGA RATED as the current top DTP package by the independant magazines, 94% AF	119.49
SPECIAL ProPage 4 & ProDraw 3 -professional illustrator's Both for ONLY	£159.99
Proper Grammer	35.90
Protext 6	109.50
Publisher	17.90
Saxon Publisher	177.95
Superbase Personal 4	78.90
Superbase Pro 4 V1.3	214.99
Typesmith	118.90
Wordsworth AGA	44.90
Works Platinum	38.99

MUSIC

AD 10 12 Studio 16 Sampler	349.95
Audio Engineer +2	189.49
Audio Master 4	41.49
Bars & Pipes 2	225.90
Clarity Sampler	104.99
Deluxe Music Const II	67.90
GVP DSS 8-PLUS	64.90
Megalosound sampler	23.90
Midi Interface	19.95
Miracle K'board/Tutor	277.99
Rombo Megamix Mstr	27.99
(see offer with Vidi 12)	
Superjam	82.90
Technosound Turbo	25.50

LEISURE TOP SELLERS

Alien Breed II AGA	22.90
AVBB Harrier Assault	27.49
Battle Chess	14.99
Blade of Destiny	24.49
Body Blows Galactic AGA	23.90
B17 Flying Fortress	22.99
Campaign	22.99
Championship Manager	16.49
Elite II	22.90
Epic	*9.99
F1 Grand Prix	*24.99
Gunship 2000	24.99
History Line	21.69
Indiana Jones	23.99
Lemmings 2	18.90
Micro Machines	18.90
Monkey Island II	23.99
Putty	*12.99
Robocod AGA	15.69
Sensible Soccer	15.95
StreetfighterII	17.49
THUNDERBIRDS!!	12.99
Their Finest Hour	5.99
Trvial Pursuit	*9.99
Wing Commander	19.49
Zool	15.99

*Price applies only with Amiga hardware purchase

CDTV/CD³² DISCS

SPECIAL - ANY 3* **59.90**
Loads available - Phone - inc.

Arabian Nights	11.90
Battlestorm	21.90
Case/Cautious Condor	27.90
Castles 2	21.90
•Ciinderella	29.90
DGeneration	21.90
Deep Core	21.90
•Fantastic Voyage	27.90
James Pond 2	23.50
Jurassic Park	27.99
•Lemmings	8.40
Lotus Turbo Trilogy	27.90
Luna'c/Overkill	21.90
NASA Heroic Age	17.40
NOW Games 1	16.49
NOW Games 2	16.49
•Pandora 2,000 Clip Art & 99 Sounds	4.79
•Scarry Poems/Rotten Kids	32.5.0
Sensible Soccer NAGA	18.90
Super Putty AGA	11.90
•Tale of Benjamin Bunny	32.50
Whales Voyage	21.90
Winter Super Sports	21.90
Zool II	21.90

• Also CDTV compatible
*up to 34.99 RRP

NO DEPOSIT CREDIT AVAILABLE (subject to status), 29.8% APR, written details on application. All major debit cards accepted, no surcharges.

NOT
SEE WARNI
TOP LH PAG

ORDERING:

TELESALES NO: 0727 856005 FAX: 0727 834944

Same day despatch for debit or credit card orders placed before 5pm subject to availability. Alternatively send cheque, postal order, ban draft or official order (PLCs, Education and Government bodies only) to; Dept AS, Hobbyte Computer Centre, 10 Market Place, St. Albar Herts AL3 5DG. Please allow 7 working days for cheque clearance. Subject to availability, despatch is normally within 24 hours of rec of cleared payment. Prices are correct at time of going to press, however, we are sometimes forced to change them, either up or down Please check before ordering. Additional services and different packages may be offered in our showrooms, and prices may vary from M Order prices. Personal callers are asked to quote this ad to ensure Mail Order packages are offered.

DELIVERY CHARGES: UK MAINLAND (NOT HIGHLANDS)

Small consumables & software items	Despatched by post, please check charges when ordering
Other items, except lasers	Next day courier service, £10 per box
Offshore and Highlands	Please enquire

IN ADDITION WE OFFER THE FOLLOWING EXPRESS SERVICES:

Saturday deliveries	Normal rate plus £15
Am next day	Normal rate plus £8

NO DEPOSIT CREDIT FACILITIES

Credit terms at 29.8% APR (variable) can be arranged for purchases over £150, subjec to status. Competitive leasing schemes are also available for businesses, including sole traders and partnerships. Just telephone for written details and application form.

TELE-ORDER (0727) 856005

• HP AUTHORISED DEALER • CITIZEN DEALER PLUS • Amiga prices, except where stated are inc. VAT. E&OE

BLITTERSOFT

(Dept. Shopper)
40 COLLEY HILL,
BRADWELL,
MILTON KEYNES,
BUCKS MK13 9DB

TRADE ENQUIRIES WELCOME

VISA | MasterCard

CREDIT CARD ORDERS ATTRACT A 2.5% CHARGE . GOODS NOT SENT ON A TRIAL BASIS. E & OE. ALL PRICES INCLUDE VAT. STANDARD COURIER £3.00 /NEXT DAY £8.00

TO ORDER CALL OR FAX (0908) 220196

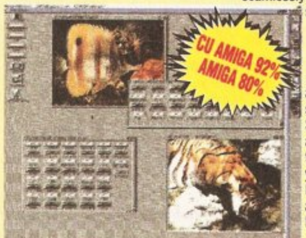
UK BBS (0908) 310208

UPPER DISK TOOLS!

Upper Disk Tools offers a new concept in the recovery of deleted or corrupt files. It recovers these files via a Virtual device, REC:, and creates a directory for each Scanned device. These can be floppy or hard drives. All files can be retrieved by CLI, Workbench or your favourite directory utility! Totally transparent and user friendly **ONLY £19.95!**

PICASSO II

Retargetable Graphics (RTG) is the future of Amiga graphics display technology. True RTG means that a graphics device will not be restricted by the memory limitations of the host system's Chip memory, or by the speed of the custom chips.



The Picasso II RTG Emulator integrates seamlessly into the Amiga operating system to give the most reliable emulation available. The new resolutions provided by the Picasso II appear in all your applications as new screen modes selectable from the standard ScreenMode requester. For any program that allows you to choose a new screen mode, you would simply choose a Picasso II screen mode as an alternative, (such as Picasso:1280 x 1024).

The Picasso II is designed to take full advantage of the host computer system. The built in Blitter and high speed memory subsystem mean that you will have super fast screen updates. Switching between Picasso II mode screens is very fast and switching between Picasso II mode screens and native Amiga screens is nearly instantaneous (as fast as your monitor can re-sync). Because the Picasso II RTG board does not use Chip RAM, your Amiga will be less likely to suffer from bus contention problems normally associated with running high resolution screens and heavy DMA activity.

The Picasso II RTG emulator has been designed so that it uses no Chip RAM. All available screen modes on the Picasso II use only Fast RAM. This sophisticated design means that even a 1Mb Picasso II board can support as many high resolution 256 colour screens as will fit in the Fast RAM of your system.

The Picasso II comes with several screen modes and resolutions that are industry standard and for which all monitors are designed. These modes operate at the proper scan rates and frequencies in order to take advantage of the most popular monitors available. In some instances, where those modes may not be sufficient, there is a program that will allow you to create your own custom screen modes. You will be able to create screen modes that exactly match your monitors frequencies and resolution capabilities. Picasso II comes with Personal Paint Lite, MainActor (animation program), IFF, GIF, JPEG and MPEG Viewers and drivers for ADPro, Image FX, Imagemaster and Real3D. Other bundles are available too.

PICASSO II 1MB + TV PAINT Jnr. ✳ FREE TVPaint Jnr ✳	**£349.95**
PICASSO II 2MB + TV PAINT Jnr. ✳ FREE TVPaint Jnr ✳	**£379.95**
PICASSO II 1MB + TV PAINT 2.0	**£469.95**
PICASSO II 2MB + TV PAINT 2.0	**£499.95**

EMPLANT

EMPLANT will revolutionise the way you use your Amiga! Imagine one card offering multiple emulations that ALL multi-task (after all, isn't that the way the Amiga was meant to work!)

The supplied Mac emulation boasts full colour (16 ECS, 256 AGA, 16.7 Million with supported graphics cards) and superb Stereo Sound.

EMPLANT supports Hard Drives, (via on-board SCSI or AmigaDOS partitions), Hard Files, MAC 800K (via Mac drive adaptor), MAC/IBM 1.44Mb, IBM 720K, EMPLANT and AMAX formats. The SCSI interface supports both Amiga peripherals and the peripherals of the emulated system at transfer rates of over 1Mb/Sec.



EMPLANT supports AppleTalk, Serial ports, Printers,, Modems, Midi etc. You may use SYQuest, any AmigaDOS device (DH:, RAD:, VDO:, etc), Scanners, Graphics Tablets, CD ROM with the emulation.

Emulation speed is exceptional and compatibility is excellent. All known software runs!

The IBM 386/486 emulation is to be released in the new year, with Atari ST/Falcon, C64/128, SNES/SEGA, Apple II (among others) all planned in the future. These will be available as low cost upgrade modules.

EMPLANT currently supports any Zorro equipped Amiga with the A1200 PCMCIA version out soon. The Mac emulation alone requires 68020/30/40 with 4Mb RAM minimum and also 256K Mac II/x/cx/SE30 ROMs.

EMPLANT can be expanded to provide 2Mb of battery-backed static RAM and has an audio digitiser built in! Other add-ons are planned. Also incorporated is a File Transfer system between Amiga/Mac/PC

EMPLANT Basic	**£299.95**
EMPLANT Option A (Apple Talk/Serial)	**£349.95**
EMPLANT Option B (Int/Ext SCSI Interface)	**£349.95**
EMPLANT Deluxe (Option A+B)	**£399.95**

NO MMU REQUIRED!
IBM PC UPDATE & A1200 VERSION IS IMMINENT!

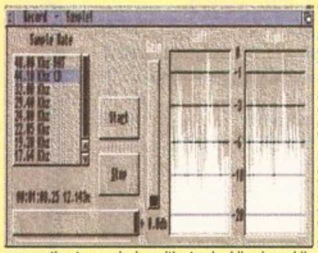
WAVETOOLS

STUDIO QUALITY SOUND, PROFESSIONAL LEVEL FEATURES!

Tired of that old 8-bit sound coming out of your Amiga?

Now you can really make some waves with the awesome sound of the all new WaveTools 16 bit Amiga sound system. WaveTools 16 bit audio card plugs into any Amiga 1500, 2000 (accelerated), 3000 or 4000 computers.

WaveTools hardware and software gives your Amiga the punchy sound quality of CD's and DAT recorders at a fraction of the price of other 16 bit sound cards.



WaveTools uses your computers hard disk drive to record, edit, mix and playback audio with the clarity and crispness that only 16 bit technology can provide. Using state of the art circuitry and the latest in 64X oversampled Sigma-Delta conversion technology, WaveTools has a frequency response of 10Hz to 20KHz and a dynamic range of 85dB for faithful reproduction of sounds from the fattest bass to the thinnest strings. WaveTools provides a pair of stereo I/O jacks for direct connection to any device with standard line in and line out connectors. Record from CD players. DAT recorders, Video Tape, Video Disk or any other line level audio sources. Add voice-overs or other sound effects to produce crystal clear audio tracks for productions demanding uncompromised sound quality.

WaveTools feature set meets the needs of the most demanding users. Audio is recorded directly onto any hard disk drive in Amiga compatible AIFF16 stereo files. Multiple waveform windows may be opened simultaneously and audio can be cut and pasted between open files to facilitate building complex audio tracks. In addition to cut and paste WaveTools supports digital mixing of unlimited numbers of tracks. Using WaveTool Mixer, you can layer sound upon sound to produce rich, full audio tracks that have the quality of studio made multitrack recordings. Using WaveTools extensive editing and mixing functions you can sweeten your basic tracks with overdubs, perform ADR, and place sound effects at specified points in the soundtrack. Best of all, since WaveTools is processing audio in the digital domain, there is no generational loss or noise increase normally associated with outdated analogue mixers and recorders. WaveTools is able to sample data at a variety of sampling rates as low as 19KHz as well as the standard rates of 44.1KHz and 48KHz for CD and DAT compatability. WaveTools includes a waveform editor for cut, copy, paste and mix operations on selected portions of audio waveforms. Edits can be tagged as destructive or non-destructive. WaveTools also maintains an internal time code in the format of SMPTE 24, 8 and 30 frames per second to ensure perfect synchronisation of your audio files with video and animation, if required.

WAVETOOLS RTX (Real Time Effect - DSP Real time echo, flange, filters etc, Real Time 8-track mixing to stereo, Real Time SMPTE PALINTSC coding) Out January - £299.95

WAVETOOLS	**£349.95**

AMIGA REPAIRS

Repairs undertaken to Amiga 500 computers at £44.95 inclusive of parts, labour, VAT and return postage/packing

Commodore registered for full technical support

Computers repaired in the quickest possible time

All machines will be overhauled with a full soak-test to ensure optimum reliability

Entrust your machine to the experts, full 90 day warranty

Repairs to disk drive and keyboard also included
(extra charge possible if found to need complete replacement)

Repairs to other Commodore systems undertaken - phone for details

Upgrades and expansions supplied and fitted - phone for details

collection service available

£44.95

To take advantage of this exceptional offer, simply send or hand deliver your computer to our workshop complex, address details below, enclosing this advertisement voucher, payment, fault description, return address, along with your daytime and evening telephone number and we will do the rest.
Should you require Group 4 Security return delivery, simply add £5.00 to the repair charge.

Access | WTS | VISA

WTS Electronics Ltd Chaul End Lane Luton Bedfordshire LU4 8EZ Tel 0582 491949 (6 lines)

(We reserve the right to reject machines which, in our opinion, are beyond repair- Normal charge applies)

FACE VALUE

The latest version of Cloanto's bitmap font editor will let you create fonts in up to 256 colours. Jason Holborn checks puts it to the test.

Back when the original A500 was still the new kid on the block, working with fonts on the Amiga was very straightforward. The fonts that you used came in one flavour and one flavour only, bitmapped fonts. These days, however, Amiga users have to contend with Compugraphic outline fonts, Adobe Type-1s, not to mention colour bitmapped fonts.

In the short stretch of time during which Workbench 2.0 (and now Workbench 3.0) has been available, outline fonts have really taken off. Virtually every program that makes use of multiple typefaces has jumped on the bandwagon and even those that haven't been upgraded can make use of outline fonts without even knowing it. The typographical needs of Amiga-owning desktop publishers have been more than adequately met with Soft-Logik's *TypeSmith* (see page 58 for a review of the latest version).

MY TYPE OF TYPE

The introduction of outline fonts on the Amiga is by no means a bad thing, but the good old bitmapped font still has its place. For one thing, colour outline fonts still aren't a reality on the Amiga and so video users for one still have to resort to bitmapped fonts if they want to add a little sparkle to their titles. This equally applies to multimedia fans. The fact is, until Commodore build support for colour outline fonts into the Amiga OS, bitmap fonts are here to stay.

In the ensuing hubbub that surrounded the excitement of outline fonts, someone forgot to tell Amiga software developers that a bitmapped font editor would be a jolly good idea. Indeed, the last commercial bitmapped font editor to be released for the Amiga (anyone remember *Calligrapher*?) died a death almost five years ago. Thankfully one company that hasn't forgot the bitmapped font is Cloanto, of *Personal Paint* fame. Their new *Personal Fonts Maker* program looks like it could be the answer to every bitmapped calligrapher's dream, offering full support for not only standard mono and colour fonts, but also outline fonts and, best of all, AGA screen modes. *PFM* (not MicroDeal's home finance program) will allow you to create mono and colour bitmapped fonts with up to 256 colours, of any size.



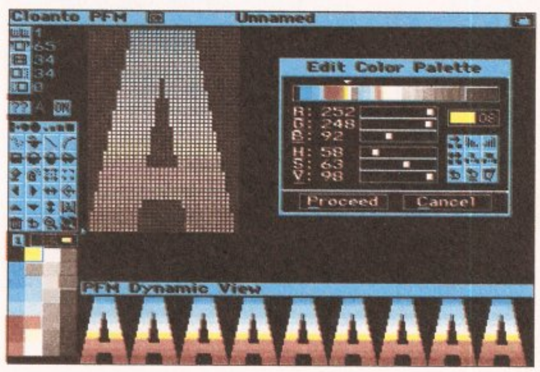
Personal Fonts Maker fully supports both mono and ColorFonts of any size with up to 256 colours.

FACE PAINTING

If you've ever used a font editor before, whether it's a professional outline font editor such as Soft-Logik's *TypeSmith* or even a basic bitmapped font editor such as Commodore's own *FED*, you should feel immediately at home with *PFM*. When the program first loads, the main *PFM* editing screen appears containing a variety of gadgets. Running down the left hand side of the screen are a selection of gadgets that form the backbone of *PFM's* editing tools. These are split into two groups. At the top are seven gadgets that allow you to alter the vertical and the kern size of the current character and you can even swap between fonts, allowing two fonts to be held in memory and edited simultaneously.



Thanks to PFM's Brush functions, you can design your own ColorFont using any paint program.



Save each character off as a brush, then import them into PFM and use them within your own font.

Below these gadgets are the main editing tools which are not unlike those you'd expect to find in a paint package such as *DPaint*. To be perfectly honest, this is one area where font editors have lacked, so it's nice to see that Cloanto have at least provided us with a selection of basic drawing tools. All the usual painting tools are here, including freehand dotted and continuous drawing, lines, curves (very useful for font design), boxes, circles, polygons and so on. Thankfully there's an Undo tool as well, so you can rescue a character should your drawing get a bit too carried away.

To the right of these gadgets is the main character editor which displays a scaled representation of the currently selected character. Regardless of the point size of the font that you're editing, *PFM* will happily scale this window so that you see the entire character. This feature effectively allows *PFM* to edit and create bitmapped fonts of virtually any size. You could, for example, create a font that was over 200 point. Rather useless maybe, but with the increased graphics power of AGA and even the planned 'AAA'

FONT PROGRAMMING

One of the most unique features of *PFM* is FFDL (short for Font Format Description Language) which is a sort of programming language designed specifically for the definition of font files. Although by default *PFM* can only save fonts as standard Amiga fonts, FFDL makes it possible for your bitmapped fonts to be saved in a format which will allow them to be downloaded to any printer that can accept downloadable printer fonts. Cloanto include a number of demonstration font formats for a selection of dot matrix printers. But, providing you have the necessary documentation, there's no reason why *PFM* couldn't be used to create 'soft' fonts for any printer that doesn't form its characters from a hard-wired character set (a Daisy Wheel, for example). Anything from simple dot matrix printers to inkjets and lasers could theoretically take advantage of this feature.

Creating a file which is in an acceptable form is simply a matter of writing a short FFDL program that defines that file format for the font that the printer expects to receive. Just like a real programming language, FFDL fully supports constants, mathematical operators and even variables. Constants simply provide a human readable method of inserting a control character into your FFDL program. ASCII 27, for example, can be written as **ESC** (short for 'Escape') and ASCII 13 as **CR** (short for 'Carriage Return'). Variables are important too as they contain font parameters. The **HDAT** variable, for example, will cause PFM to spool the bitmap of the current character from top to bottom.

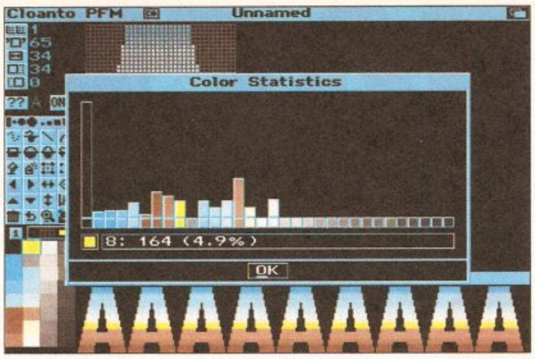
Amigas, larger point sizes are quickly becoming the norm.

OUT FOR A BIT

Although *PFM* is primarily designed as a bitmapped font editor, it's surprising to see that it can actually load outline fonts too. When you select a font to load, the *PFM* file requester tells you the type of font that you're attempting to load by appending a letter to the end of the font in question – **t** signifies a standard mono bitmapped font, **c**, a colour font and **s**, a scalable outline font. Although *PFM* can load scalable fonts, they're automatically converted to bitmapped fonts, so it isn't possible to save an outline font that you've loaded into *PFM* back out as an outline font. This really is a shame. If Cloanto had built full support for the entire range of Amiga font formats into *PFM*, it would be an exceedingly powerful program.

Once you've loaded a font into memory, only a single character can be edited at any one time and so making even minimal changes to a font can take a lot of time. Editing a character is much like using a paint program. Because bitmapped fonts are pixel-based, characters are edited by adding or removing the individual dots that make up the character. These *DPaint*-like editing tools are all fine, but *PFM* does lack in its ability to work on a font on a global basis. Although you can flip an entire font, it would have been nice if you were able to adjust the baseline of a font etc. As it is, performing such operations is an extremely time consuming task.

It's nice to see, however, that *PFM* does fully support Colorfont editing which is something that was sadly lacking from Commodore's own *FED* editor, although *Calligrapher* could handle this too. The great thing about *PFM's* ColorFont support is that Cloanto have built in full AGA compatibility, so it's actually possible to create ColorFonts with up to 256 colours if you so wish, rather than just the 16 that pre-AGA ColorFonts were restricted to.



PFM offers many image processing tools: a histogram of colour usage, colour reduction and even dithering.

COLOURFUL CHARACTER

There are very few (if any) 256 colour ColorFonts available, so you'll have to create your own if you wish to take advantage of this feature. The most direct method of creating a new ColorFont is to load an existing mono bitmapped font and then alter the screen depth so that the extra colours become available. You could then paint in the extra colours using *PFM's* powerful painting tools. A far easier method is to use a real paint program like *DPaint* to design your ColorFonts, then use *PFM's* brush handling functions to load each character into memory as a brush.

Saving each character off to disk as a brush within *DPaint* and then loading them into *PFM* is rather time consuming and prone to error, however. A much better way of handling this would have been to offer a method of loading an entire IFF into *PFM* and then picking up each character as a brush directly - a bit like a *Sprite* editor really. Why none of the font editors available for the Amiga allow you to do this is beyond me, so let's just hope that Cloanto read this and take note.

Whilst editing a character, *PFM* provides you with a method of testing the entire font 'en masse' to see how well your new characters work together. This is only available in smaller point sizes, however, so there's no way of testing larger fonts short of saving them off to disk and then loading them into a program like *DPaint*. Surely it would have made sense to simply open a separate screen for this preview when the font becomes too large for its **Dynamic View**. Oh well, no program is perfect.

CONCLUSION

Personal Fonts Maker is by no means the ultimate Amiga font editor and there's still a lot of room for improvement, but what it does do, it does very well indeed. Even in these days of outline font technology, Color Fonts are still very popular and, unless you can find a copy of *Calligrapher* being sold off cheaply at a local car boot sale, *PFM* is the only program available that will allow you to create your own ColorFonts. Despite its limitations, I have to admit that I do like *PFM*. Its user interface is one of the friendliest and most polished that I've seen for a very long time and it's surprisingly easy to use, even if it does take an eternity to create a font from scratch. If you need to be able to create your own mono or bitmapped ColorFonts, then you won't go far wrong with this program. It certainly isn't in the *killer application* league inhabited by *TypeSmith*, but it's a very good program nevertheless. **AS**

JARGON BUSTERS

Font – Contrary to popular belief, the term font does not refer to the overall appearance of text, but merely a collection of all the various characters and symbols needed for the accurate printed representation of text in a particular size and style. Helvetica 11 and Helvetica 18 may be part of the same font family, but they are actually two separate fonts.

Font Editor – A program that allows you to alter both the appearance of a font and certain attributes of the font itself (it's leading, kerning etc).

Typeface – A typeface is a collection of similar fonts. Helvetica 11 point and Helvetica 18 point are two different fonts, but both are the same typeface.

ColorFont – A relatively new addition to the Amiga. All ColorFonts are bitmapped and also multi-coloured. They are very useful for video and multimedia work as the extra colours can give an impression of texture – stone, metal or chiselled granite, for example.

Outline Font – Even newer on the Amiga is the outline font, a totally different type of font that can be expanded and shrunk with little or no loss in quality. Outline fonts differ from bitmapped fonts because they are mathematically calculated, that is the individual points that make up the corners of the font are held as a series of mathematical co-ordinates with lines and curves joining them. Outline fonts are particularly useful for word processing and desktop publishing as they are printed at the maximum resolution of the printer, giving jaggie-free results.

Leading – (pronounced 'Ledding') refers to the gap between two lines of text. By increasing or decreasing the leading of a font, the line spacing will increase or decrease respectively. Most Amiga DTP and document processing programs allow you to define the amount of leading, either in points or as a percentage.

Kerning – Adjusting the kerning of a font allows you to make it appear 'tighter', that is you can adjust the space between individual characters. Look out for kerning pairs. These are combinations of characters that have been specifically adjusted so that they fit together better – **AV**, **Va**, **Te**...

Base Line – The baseline is an imaginary line on which the base of all characters within the font rest. If a character has a descender (p, q, y etc), the lower part of it will be displayed below the baseline.

Point Size – The measurement system used for fonts. The point size of a font is measured from the top of the ascender to the bottom of the descender. A single point is approximately equivalent to 1/72 of an inch or 1/12th of a pica.

SHOPPING LIST

Personal Fonts Maker 2...£59.95
Available From: Meridian Software Distribution, East House, East Road Industrial Estate, London SW19 1AH
Telephone 081 543 3500

CHECKOUT
PRODUCT NAME

Features
●●●●●●●○○○
Outline font support is a little limited, but it's nice to see that *PFM* supports 256 colour ColorFonts.

Documentation
●●●●●●●●○○
Like Cloanto's previous efforts, the *PFM* manual is well written and very detailed.

Performance
●●●●●●●○○○
Even outline fonts are processed very quickly. *PFM* does slow down a little when editing 256 colour fonts.

Ease of Use
●●●●●●●●○○
PFM boasts a well designed front end that is logical and easy to use.

Value for Money
●●●●●●●●○○
A good price for a good package, especially if you need to create your own ColorFonts.

Overall rating
●●●●●●●○○○
Although not quite the ultimate font editor that Amiga users have been looking for, *PFM* is a capable program.

OPEN ALL HOURS

WELL, NEARLY!
9am-10pm Mon-Sat, 10am-6pm Sunday

SPECIAL OFFERS!!

LOOK! LOOK! LOOK!

DSDD DISKS 29P | **100 DISKS + 100 CAP BOX £31.99**

ASK FOR "SPECIAL DISK OFFER" WHEN ORDERING

2.5 HARD DRIVES FOR A600/A1200

40 MEG	£119
80 MEG	£189
120 MEG	£209
250 MEG	£259
340 MEG	£309

INCLUDING LEAD, FIXING SCREWS + INSTRUCTIONS

PRINTERS & RIBBONS

Star LC20	£133.00
Star LC100 Colour	£159.00
Star LC200 Colour	£194.00
Seikosha SP1900 9 Pin Mono	£119.00
Seikosha SL95 24 Pin Col	£189.95
Star LC24-30 + Auto Sheet Feeder	£229.95
Star LC24-200 Colour	£274.00
LC20/LC100 mono ribbon	£4.50
LC100 colour ribbon	£6.75
LC24 200 mono ribbon	£5.50
LC24 200 colour ribbon	£13.50
LC200 mono ribbon	£4.50
LC200 colour ribbon	£9.75

LEADS & CABLES

Printer Lead	£3.99
Serial	£4.99
Null Modem	£5.99
Joystick Extender 3 metre	£3.99
Joystick/Mouse Extender	£3.99
Amiga to SCART	£7.99
Amiga to 1084S/8833	£7.99
Analog Joystick Adapter	£4.99
4 Player Adapter	£5.99

LOOK! LOOK! LOOK!

TRACTORFEED DISK LABELS

Now you can print your own professional disk labels! 500 Plain white disk labels on tractor feed, complete with FOUR disks of software and artwork.

Yours for ONLY £9.95

1000 Labels with software ONLY £13.50

AMIGA HARDWARE

A1200 Race & Chase pack	£289.95
A1200 Desktop Dynamite	£329.95
CD32 + Oscar/Diggers	£289.95
A4000-030 2Mb Ram 170Mb Hard drive	£999.95
1084 S Monitor	£174.95
Cubscan 1440 Multisync	£399.95
External Floppy + Virus Killer	£56.95
A500 Internal Floppy Drive	£48.95
A500 512k Ram exp + Clock	£23.50
A500 1.5 Meg Ram exp	£76.95
A500+ 1 Meg Ram exp	£33.95
A1200 2 Meg Ram exp + Clock	£129.95
A500 Power Supply	£29.95

DISKS & LABELS

All disks are supplied with labels. UNBRANDED DISKS are 100% error free. In the unlikely event that any of our disks are faulty, then we will replace the disks **AND** reimburse your return postage!

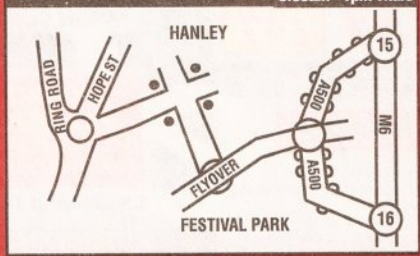
3.5" DSDD Grade A	£0.37 each
3.5" DSDD Grade B	£0.29 each
3.5" Rainbow	£0.44 each
3.5" DSHD	£0.58 each
3.5" DSDD Fuji (box of 10)	£4.90
3.5" DSHD Fuji (box of 10)	£8.90
5.25" DSDD Fuji (box of 10)	£2.50
5.25" DSHD Fuji (box of 10)	£4.90
1000 3.5" labels	£6.50
1000 3.5" tractorfeed	£8.50

STORAGE BOXES

Most types are available for 3.5" or 5.25" disks.

10 capacity	£0.95
20 capacity	£1.95
40 capacity	£3.49
50 capacity	£3.95
100 capacity	£4.50
80 capacity Banx drawer	£8.49
150 capacity Posso drawer	£15.95
200 capacity drawer	£14.95

VISIT OUR NEW SHOP 9.30am - 5.30pm Mon - Sat 9.00am - 1pm Thurs



MISCELLANEOUS

Mousehouse	£1.80
Mousemat 9mm thick	£2.50
Diskdrive cleaner	£1.80
A500 Dustcover	£3.50
A600 Dustcover	£3.50
A1200 Dustcover	£3.50
Monitor Dustcover	£3.50
LC20 Dustcover	£3.50
LC100 Dustcover	£3.50
LC200 Dustcover	£3.50
LC24-200 Dustcover	£3.50
Roboshift	£13.95
Amiga Lightpen	£29.95
Optical Mouse	£32.00
Megamouse II	£11.95
Megamouse 400 DPI	£12.95
Point Mouse	£12.95
Altadata Trackball	£26.95
Crystal Trackball	£32.00
Zydek Trackball	£25.95
Zyfi Amp/Speakers	£37.50
Screenbeat Speakers	£24.95
Action Replay Mk III	£56.95
Midi Master	£26.00
Tilt/Turn Monitor Stand	£9.95
2-piece Printer Stand	£3.49
Metal Printer Stand	£8.99
A4 Copyholder	£5.99
Metal Angle Poise Copy Holder	£14.95
A500/A600 ROM Sharer	£14.95
V1.3 ROM	£25.95
Microperf Tractorfeed Paper: 500 sheets	£4.50
2000 sheets	£13.00

JOYSTICKS

All joysticks have autofire feature except those marked *.

Trigger Grip Models

Quickshot turbo	£6.95
Python 1M	£7.99
Jetfighter	£12.00
Topstar	£19.50
Intruder	£21.50

Base Fire Button Models

Maverick 1M	£12.95
Zipstick	£12.95
Comp Pro 5000*	£10.95
Comp Pro Extra	£12.95
Comp Pro Star	£12.95
Cruiser Multicolour*	£9.95
AdvancedGravis Black	£24.99
Advanced Gravis Clear	£27.99
Comp Pro Star MINI	£14.95
Aviator 1 Flightyoke	£23.50

Handheld Models

Speedking	£10.50
Navigator	£13.95
Bug	£12.00

ANALOG JOYSTICKS

These Joysticks will fit any Amiga

Warrior 5	£14.95
Saitek Megagrip 3	£19.50
Speedking Analog	£13.95
Intruder 5	£25.50
Aviator 5 Flightyoke	£27.50

Adapter to use any PC analog joystick on an Amiga ....ONLY £4.99

COMPUTER SUPPLIES Direct

0782 206808 - Anytime
0782 642497 - 9.00am-5.30pm Weekdays
0630 653193/0782 320111 - Evenings & Weekends

Access | EUROCARD | MasterCard | VISA

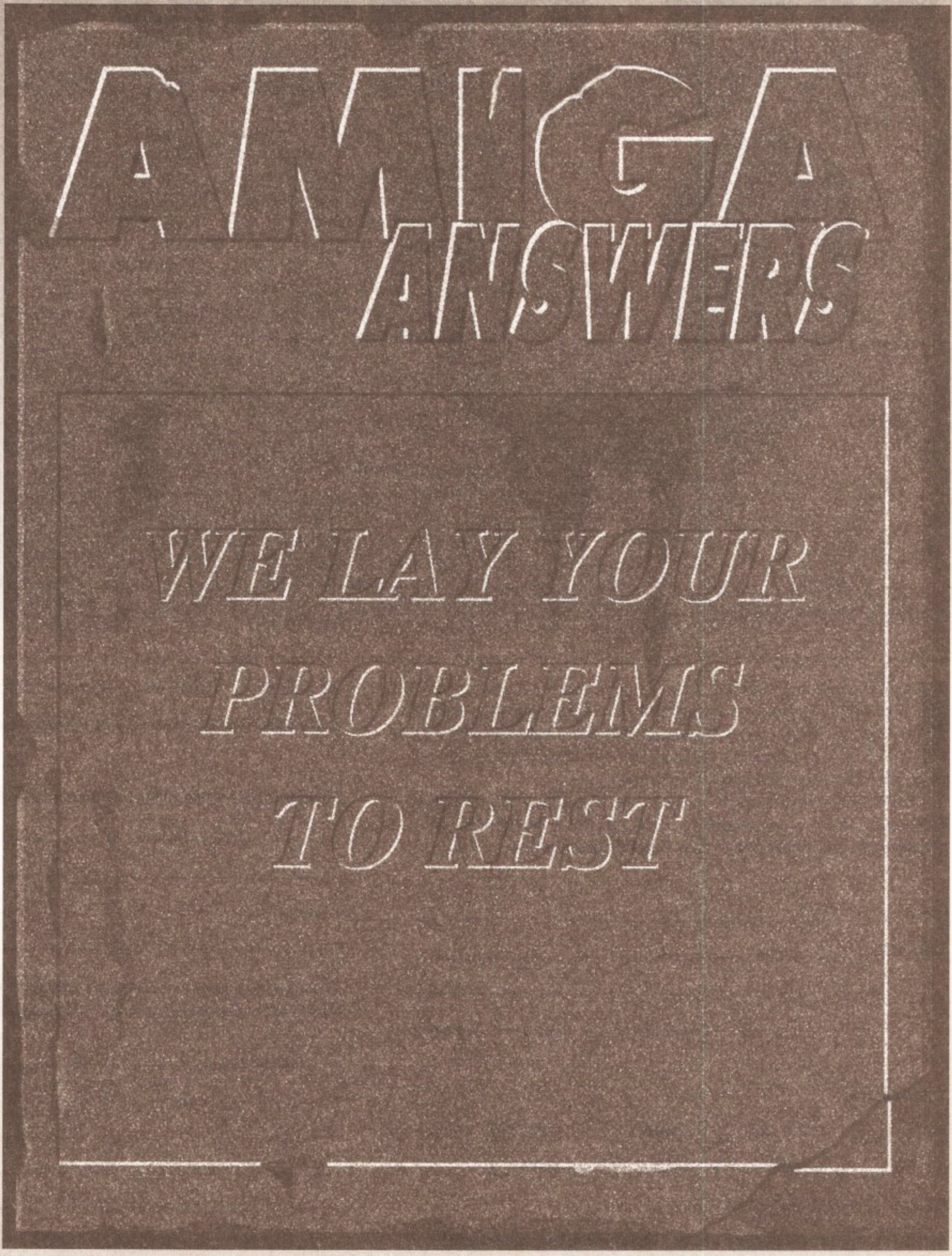
BUSINESS HOURS
9am to 10pm Mon-Sat, 10am to 6pm Sun
All items and offers subject to availability. E&OE
Postage £3.30: Next Day £3.75
We accept POs, cheques & credit cards
Please write Cheque Card Number on cheque for instant clearance

BUSINESS AND EDUCATION ORDERS WELCOME ***All Prices inc VAT***

DIRECT COMPUTER SUPPLIES 36 HOPE ST, HANLEY, STOKE ON TRENT ST1 5BS

OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS

CONTENTS AT-A-GLANCE



USING THE ICONS TO FIND WHAT A QUESTION'S ABOUT

BEGINNERS Questions that raise basic problems or deal with elementary issues feature this icon.

GENERAL This icon's for general Amiga-related queries or questions that don't fall under other headings.

DTP This is the icon you'll find next to queries related to the whole area of desktop publishing.

MONITORS Questions about monitors, including television display problems, will feature this icon.

HARDWARE This icon's for queries relating to general hardware, excluding kit covered by other headings.

BUYING This icon indicates a question asking for buying advice in any area, hardware or software.

PRINTERS If a query concerns printers, printer drivers and hardcopy problems, this is the icon you'll find.

CODING Questions about coding (no matter which language) will have this icon next to them.

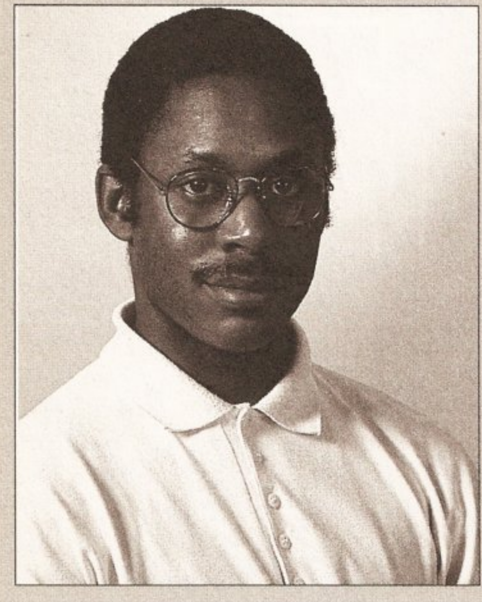
VIDEO This one's for queries about using your Amiga with video hardware such as genlocks or digitisers.

MUSIC This icon is for questions about MIDI, sampling, synthesisers and music software.

SOFTWARE Queries about specific software packages, or programs have this icon next to them.

COMMS If your question relates to comms, including modem problems, this is the icon we'll use.

NO PROBLEM!



Hello and welcome to our magazine within a magazine – the place you can turn to when in dire straits concerning your Amiga. I am Graeme Sandiford, *Amiga Shopper*'s new technical writer. It will be my job to make sure that all your problems will be sorted out, no matter how trivial or complex. As I'm sure you've already noticed, we devote more space than any other magazine to this useful service, so keep your questions coming in. I will definitely do my best to find a suitable solution to all your worries. Trust me!

Our use of jargon-busting boxes is familiar and it will continue to ensure that explanations of any unfamiliar terms will be given. The problems will also continue to be put in as wide a context as possible for everybody's benefit. It could be worth your while to have a look through these pages to see if someone else has a problem similar to your own. The index on the previous page will be your guide to the topics covered this month.

I am sure you are all familiar with our house team of Amiga experts. **Mark Smiddy** is our AmigaDOS and floppy drive expert. **Jeff Walker** is our desktop publishing, fonts and printer correspondent. **Gary Whiteley**, is an old and trusted expert on video applications and graphics. **Jason Holborn** is the master of the intricacies of AMOS, who also has an encyclopedic knowledge of what's available in the PD world. If you have a query about comms then we'll set **Dave Winder** on the case. **Toby Simpson** is our code clinician. If you're experiencing problems with anything from C to assembler, try taxing his little grey cells instead. **Pat McDonald** is a man who knows all you need to know about CD-ROMs, hard drives and general hardware. Finally, we've got a man you can rely on to know all there is to know about operating systems programming – **Paul Overaa**.

Well, now it's really up to you to keep us all on our toes. Let all your queries, problems, worries, or general tips and hints come pouring in. With a good tip you could be a tenner richer. Write to me and I will do my utmost to sort you out!

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you.

Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Sorry, but we cannot reply personally to any questions – even if you include an SAE.

Name: ______________________

Address: ______________________

____

____

Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐ **A1200** ☐

A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine: __________

Kickstart version (displayed at the "Insert Workbench" prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.04/2.05** ☐ **2.1** ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! __________

Total memory fitted (see AVAIL in Shell for Workbench 1.3) ________

Chip memory available (see AVAIL in Shell) ________

Agnus chip (if known) ________

Extra drive #1 (3.5in/5.25in) as DF__: Manufacturer ________

Extra drive #2 (3.5in/5.25in) as DF__: Manufacturer ________

Hard disk: ____Mb as DH__: Manufacturer ________

Extra RAM fitted – type, size in Mb and manufacturer ________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 36

MEMORY, MEMORY, MEMORY

DTP

I am having some problems with *PageSetter 3*. When I change the program to boot in black and white mode it still starts in colour mode. I can switch to black and white once it has loaded, but I don't know whether this frees all the memory used by the colour screen. This option used to work on my A500 Plus, but not on my new dual-floppy, 2Mb 1200.

I seem to have severe memory problems when using Compugraphic fonts of 100pt or more. I can only print about three characters on a page. This applies only to printing, I can set up a page with much more than this. Is this normal? I cannot print the whole example Newsletter page at 300 dpi on my Canon LBP 8II laser printer. Incidentally, *Turboprint* is the only driver I can find for this printer.

I am on a limited budget, but I think that a memory upgrade is necessary. I have seen a 2Mb upgrade for £109 and that is about as much as I can afford. Will this allow me to use two or three Compugraphic fonts on a page, with one at 100pt or more, or will I need a 4Mb upgrade?

Steve Edwards
Southend-on-Sea, Essex

On pages 145 and 146 of your *PageSetter3* manual, you'll see the program's Workbench startup options listed. These are **ToolTypes** that are entered into the *PageSetter3* icon's Information requester. Click once on the *PageSetter3* icon, select **Information** from Workbench's Icons menu, add or change the **COLORMODE= ToolType** so that it reads **COLORMODE=BW**, click the **Save** button.

Compugraphic fonts were never designed to be used at very large point sizes. With enough memory you are usually safe up to about 90pt, anything over that and it is a bit hit-and-miss whether they will print or not, even with lots of memory. The solution I adopted was to convert and save my large headings as structured drawings from *ProDraw 3* and import these into *PageSetter3*. That involves buying a hard drive and *ProDraw* of course, but I'm afraid there is no cheap alternative.

Buying a 2Mb RAM upgrade that cannot be expanded further would be a false economy. You honestly need at least another 4Mb to be comfortable with even simple desktop publishing. You should also phone Canon Technical Support (081-647 4044) and get a proper driver for your LBP 8II, something which has been available and regularly updated for two years now. ***JW***

NO ITALICS

PRINTERS

I have found it impossible to print italic fonts on my Canon BJ-10e printer and have been told that this printer is not configured for them. Is this correct?

R J Crawford
Cramlington
Northumberland

Yup, I'm afraid so. The model that came after that, the BJ-10ex, contained italic fonts, but the original BJ-10e did not. ***JW***

RHYME TIME

GENERAL

All I want is a thesaurus and a rhyming dictionary. I want to be able to read a list of words into the thesaurus and get a list of synonyms out. Then I want to run this output file through the rhyming dictionary and get a list of all rhyming synonyms. I have searched high and low but cannot find anything even remotely close. I'll even consider a PC version if you know of one.

Mark Robinson
Norwich

There is definitely no Amiga rhyming dictionary, nor a separate Amiga thesaurus. They all come with little things called word processors attached. Any software rhyming dictionary would have been licensed from one of the hardcopy rhyming dictionary publishers (Longman, Collins and the like), so the best thing would be to ring around these publishers and ask. ***JW***

ON THE BOOKS

DTP

I want to prepare a book from manuscript to camera-ready copy on my dual-floppy, 2Mb A500+. Softwood tells me that I will need to upgrade my *Pen Pal* to *Final Copy II* to achieve the high resolution output needed. Would it be better for me to buy a DTP package? If so, which one?

B Pettifor
Caernarfon
Gwynedd

Well, to start with, a book would normally be prepared and saved chapter by chapter. Your 2Mb of memory is not going to be enough to hold all the pages in a chapter, unless they are only short ones with no pictures. Your first priority must therefore be at least 4Mb more memory. Such a task would also be slow and cumbersome to achieve from floppy disk, so a hard drive is on the cards as well.

Without this kind of hardware, whatever software you use will struggle to cope with the task of publishing a book. *Final Copy II* is certainly up to the job, but *Final Writer* (which requires a hard drive) would be better. The best package for typesetting long publications like books is *AmigaTeX*. Many manuals that come with Amiga software are produced with this. Alas, there is no UK distributor, so you'll have to contact the developers direct: Radical Eye Software, Box 2081, Stanford, CA 94309, USA.

If you really must attempt the job on a shoestring, without a hard drive and more memory, then I'd recommend the *PageStream 2* desktop publishing package. ***JW***

JARGON BUSTING

Compugraphic fonts – Rather than a simple bit-mapped image of each character, which grows more jagges with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied in printing, no information is lost and the result always looks smooth.

Fast RAM – Any extra memory which is not Chip RAM. The custom chips cannot access it, and because such accesses to Chip RAM can block out the central processor and slow down its own accesses, Fast RAM is faster.

Hard drive – like a floppy drive, but much bigger and faster. Also, the disk cannot be removed, so once the hard drive has been filled, it's either time to delete excess files or get another one.

Escape codes – a means of sending a printer formatting instructions embedded in an ASCII text file.

MORE RESOURCES NEEDED

DTP

I read in your review of *PageSetter3* that it comes with only one font. It would therefore require the addition of others. Are they easy to install? I have a 1Mb, single floppy A600.

R T Crawford
Cramlington
Northumberland

Well, for a start *PageSetter3* requires at least two floppy drives (a hard drive is better), and the 1Mb of RAM you have will be pitifully little to actually achieve anything creative. You'll need at least another 1Mb in the trapdoor and, almost certainly, some smart card memory for the PCMCIA slot if you are to avoid the dreaded "Not enough memory" requester.

Installing additional Compugraphic fonts for *PageSetter3* is merely a matter of copying them on to the relevant disk, or into the relevant directory on a hard disk. ***JW***

BROKEN PUBLISHER

DTP

***The Publisher* will not run on my new A1200, which has a 40Mb hard drive and 4Mb of extra RAM fitted. It works fine on my A500, however. When running from hard disk or from floppy, I get a "Recoverable alert" message shortly after *The Publisher* Fonts disk is asked for. I wrote to The Disk Company in August last year, but have received no reply.**

A M Grahame
Ampthill
Bedfordshire

Hmm. *The Publisher* runs OK on my Workbench 3 A4000, and the only reason I can think of why it will not load on your 1200 is that there is a problem with your expansion memory. Remove the memory from the trapdoor and try *The Publisher* again with just the straight 2Mb of RAM that comes with the machine. If that works, it means that the RAM expansion is faulty. ***JW***

MISSING UPDATE

DTP

Apparently, to get a Compugraphic font to work with *ProPage 3.0* after installing it, you need to run CG_Update. But my version of *ProPage 3.0* does not appear to make any reference to CG_Update in any of the supplied manuals, and the CG_Update program is not in any of the archives on the disks. Can you tell me if this is actually the case and what to do now?

Rob Darke
Whitecross
Hereford

I don't think version 3.0 of *ProPage* ever came with the **CG_Update** program, although versions 3.1 and 4.x do, and so does *ProDraw 3*. The

simplest thing would be to write to Gold Disk and update to version 3.1, which is a free *bug-fix* upgrade to registered users, or 4.1, which (to registered 3.x users) costs CDN$85 plus CDN$8 shipping.

Alternatively, buy your fonts in **Type 1** format and use the **FontManager** program to convert and install them as Compugraphic fonts. This process doesn't require **CG_Update**. ***JW***

UPGRADE OR DIE

PRINTERS

I have installed *DPaint 3* on my 1200's hard drive correctly, but although most of the features I require work perfectly well, it refuses to print anything other than a Guru number. It will print if I boot from the *DPaint 3* floppy (I have a Citizen Swift 9 Colour), but not when I run it from hard disk.

I've tried using the "Original chip set" option when booting and having the CPU cache disabled, all without success.

Contacting Electronic Arts was no help. They said they were aware of compatibility problems with the A1200 and *DPaint 3* and recommended that I upgrade to *DPaint 4*. How surprising!

My hard drive is formatted with the FastFileSystem and the *DPaint* floppy is formatted with the OldFileSystem. Could this have a bearing? It's not a virus because I've got *VirusChecker* running all the time. Can you help?

Lester G Fish
Norwich

Many programs suddenly develop bugs, or even stop working entirely, when the operating system changes. The way companies fix this is to upgrade the program so that it is compatible with the new operating system. Normally a 'nominal' charge is made to registered users of the software, which can range from just £5 for shipping to £100 or more for what would cost an unregistered or new user two or three times that price. This is normal practice. In this particular case it also makes a lot of sense to upgrade because *DPaint 3* does not support the AGA chip set, so you are missing out on some really special features.

Having said that, this does not sound like a chip set incompatibility problem, I've got a sneaking suspicion that it is the old printer driver problem. You didn't tell me, so I'm guessing that you are running and using *Citizen Print Manager* from your hard disk. But when you boot from the *DPaint 3* floppy, you will not be using *Citizen Print Manager*, you will be using the standard EpsonX 9-pin printer driver, as selected and saved using the **Preferences** program on the *DPaint 3* program disk.

Citizen Print Manager (which is a cut down version of *Turboprint*) doesn't appear to get on too well with Kickstart 3 and Workbench 3. I suspect that if you do not run it, but instead use the **Prefs/Printer** editor to select EpsonX or EpsonXOld as your driver, *DPaint 3* will print when you run it from your hard disk. The file system used to format the disk will have no bearing on the matter.

PAINFUL SEPARATION

PRINTERS

I use *Wordworth 2*, which will produce coloured text and save in various formats: ASCII, *KindWords*, FTXT and so on. I also use *FlexiDump 2.21* and three coloured printer ribbons for my mono Oki MP193 printer to produce coloured pictures by printing the three colour separations, one on top of the other.

I want to save *Wordworth* text as an IFF file, which I understand from the manual is possible via *KindWords*/FTXT, but when I do that I find that *FlexiDump* will not load the file - "Not an IFF file," is reported.

Should I save the *Wordworth* text as an IFF file specially in the Save As requester, or am I barking up the wrong tree?

M Staples
Rustington
West Sussex

Woof. Us Amiga magazines are partly to blame for your confusion because of the way we casually use the term IFF to mean *bitmap graphic*. IFF actually means *Interchange File Format* and there are several types of data that can be saved in this format, bitmapped graphics being one of them and text (FTXT) being another. When we write about IFF graphics, what we should properly write is IFF-ILBM, or just ILBM, which stands for *InterLeaved BitMap*.

The files that *FlexiDump* loads are IFF-ILBMs, the same type of graphics saved by all painting programs. Word processors do not save in IFF-ILBM format because the resulting file, saved at high resolution for good printing results, would be enormous, way too big to fit on a floppy disk.

So what can you do? Well, not a lot without buying some more software. You need software that will provide this colour separation feature for *pin* printers when printing normally from any application. *Turboprint* can do this, but the current version doesn't appear to work too well with the 1200. *Studio Printer Software* can also do this, and provided your ML193 works with one of the standard Workbench printer drivers, you'll get more control over your output with *Studio* than with any other printing software. In a nutshell, you would use the *Studio* preferences program to select which colour separation to print, and then select the **Print** option in *Wordworth*. ***JW***

DO IT PROPERLY!

GENERAL

I have an A500 with 1Mb internal RAM. I am using Workbench 1.3, a 52Mb GVP hard drive, a second disc drive, and a Star LC-10 colour printer. I run *Protext*, and have just received Arnor's publicity for version 6.1. I am particularly interested because they are offering a Kickstart 2 ROM for only £20.

I understand that *Protext 6* comes with a Workbench 2 disk. Is it easy to convert to Workbench 2? I have *Quarterback* and reckoned that if I backup my hard disk, fit the Kickstart 2 ROM, use the Workbench 2 disk supplied with *Protext 6*, and then use *Quarterback* to transfer all my programs and data back to my hard disk, I should be OK. Do you think I will?

If that should work, will I be able to do it without the Workbench 2 Manual? Will I be missing other important disks, like the Extras Disc that came with 1.3?

I don't really use games so I am not worried if some of those don't work, but can you tell me if the following programs that are currently on my hard disk will simply re-load when I re-install after changing to the Kickstart 2 ROM: *PageSetter 2, Wordworth 2, DPaint 3 and 4, PGA Golf, Superbase Personal 2, GBRoute, SID, Quarterback*.

Will they re-install using *Quarterback* in the normal way, or will I have to re-install each program separately and then add the document and data files using *SID*?

Money, or lack of it, is a major factor for me, but do you think I would be better off buying the full conversion kit (about £80?) including the manuals? This must be all very basic from your point of view, but I would appreciate a reply.

David Veness
St Albans
Hertfordshire

The *Release 2.1 Enhancer* pack comes with one Kickstart 2 ROM, five system disks and five manuals. What Arnor supplies on the *Protext 6* program disk is a very, very cut down version of the Workbench 2.1 disk which is totally useless for upgrade purposes, even if you buy a Kickstart 2 ROM. There are only two ways to upgrade your Amiga – either buy a new one, or buy the proper upgrade kit. Anything else is a recipe for confusion.

Upgrading from 1.3 to 2.1 using the official kit is a doddle. First you fit the ROM, then you boot from the supplied **Install** disk. You run the installation program and it is all done for you. You don't even need to backup your hard drive, as the only files that will get deleted or overwritten are old system files that will no longer be needed.

All the applications you mention work perfectly under Kickstart and Workbench 2, although if you don't have current versions of *SID* and *Quarterback*, you may need to upgrade them. I have no idea about *PGA Golf*. ***JW***

FUZZY BARE

PRINTERS

I used to get lovely clear print from my Canon BJ-10ex bubble jet, but suddenly it's all coming out fuzzy. I have tried everything that the

JARGON BUSTING

Directory – An organisational method of storing files on a disk in a heirarchy. A directory is a sub-section of a disk which may contain files and/or further directories.

Format – A process of preparing a floppy disk so that it can be used by the Amiga.

IFF – Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way. It allows data to be exchanged between programs very easily and avoids the situation on, say, the PC where dozens of different graphics packages each save data in their own incompatible formats.

DPI – Dots Per Inch - a method of measuring the resolution of scanners, printers et al. The more dots across or down a page per inch a scanner can recognise, the higher its resolution.

DTP – Desktop Publishing, the process of producing documents for print on a micro computer.

manuals suggest, but noting improves it. The only thing that I can think of that may be causing this problem is that I am using re-filled cartridges rather than new ones. What's happened?

Bob Preston
Morton
Lincolnshire

The printer head for your BJ-10ex, the bit that transfers the ink from the cartridge to the page, is actually part of the ink cartridge rather than the printer itself. While it is possible to refill and re-use these cartridges, it is also possible to damage the print head while refilling, or damage the print head by using the wrong type of ink, or the print head may simply wear out after a lot of use. The solution is to buy a new ink cartridge rather than keep refilling the old one, which is obviously either knackered or damaged. ***JW***

RAIDERS OF THE LOST ENVARC

PRINTERS

After running the Printer preferences editor (from my hard drive), selecting EpsonQ and then Save, I get the error message "ENVARC:Sys/Printer.prefs, object not found". This sad message unfortunately also occurs with Generic. What silly thing am I doing or not doing.

A C Murdoch
Leigh-on-Sea
Essex

The "object" in the error message that cannot be found could be one of two directories. The **ENVARC:** logical device is **SYS:Prefs**, so the first thing to check is that there is a **Prefs** drawer on your **SYS:** device (the partition you boot from). After that you really need to check that there is a **Sys** drawer inside that **Prefs** drawer.

If **Prefs** and **Prefs/Sys** are present, then the problem is more complicated. Have you altered your **S:Startup-Sequence** at all? If so, go back to using the original **Startup-Sequence** as supplied by Commodore. If you want to make any additions to the startup, either create a **S:User-Startup** file or drop the relevant programs into the **WBStartup** drawer.

Finally we are getting to your last question. The question I have to ask you her is: Are you using *Disk Expander*, the program that crunches disks to make more room on them? This program is slightly incompatible with Workbench 2/3 inasmuch as any program that employs the standard **SetEnv()** call will fail (with the error message you received) when trying to write to a *Disk Expander* device. ***JW***

PHOTOS ON TAP

DTP

I'd like to achieve the same job as colour photocopying by using a scanner and printer. What are your opinions of the Colorburst, *PageStream*, Primera (dye sub) combination?

Ola Johnson
London N11

The fly in your ointment is *PageStream*. To get photorealistic results, you will need to print at a greater colour accuracy than *PageStream 2.2* is capable of. The solution is either *StudioDS* (Power Computing ☎ 0234 843388) or *ADPro 2.5* (Meridian ☎ 081 543 3500), both of which support the *Primera* in dye sub mode and produce good results.

As the Epson GT-6500 A4 flatbed 24-bit scanner costs only about £250 more than the Colorburst, I recommend you give this purchase careful consideration. The difference in quality between 24-bit GT-6500 and 18-bit Colorburst scans is enormous, but if you really can't stretch to the Epson, Colorburst scans of photos shouldn't print too badly on the *Primera*. ***JW***

LARGER TEXT

DTP

Is there any way I can use my AmigaFonts disk with my *TransWrite* word processor to get larger text?

Clifford R Owen
Worthing
Sussex

No! *TransWrite* is a text-based word processor and, as such, uses only the standard topaz font for screen display, and the currently selected printer font to print with. To get better font support you need to use a WYSIWYG (What You See Is What You Get) word processor, which is also called graphics-based word processor, document processor and word publisher (something like *Wordworth* or *Final Copy*). ***JW***

FOUNTAIN OF WORRIES

GENERAL

Having acquired a hard drive, I now want to be able to use the fonts on AmigaFonts2.0, particularly the scalable Compugraphic ones. The Workbench manual explains that to use these fonts I must install the *Fountain* program and the fonts from AmigaFonts2.0 on to my hard drive. This seems fine, but the manual says that it will replace the standard diskfont.library file with the new outline fonts version of diskfont.library, which brings me to my problem.

In the FONTS: directory of my hard drive are other fonts, put there by other programs. Will installing *Fountain* and AmigaFonts2.0 remove these fonts as well as the standard diskfont.library file?

Philip Overy
Wallington
Surrey

There is no need to worry. All that will happen is that a few more files will be added to your **FONTS:** directory and the outline version of **diskfont.library** will be installed. This version of **diskfont.library** works with both Compugraphic and standard Amiga bitmap fonts. ***JW***

JARGON BUSTING

Startup-sequence – a program which is executed every time the Amiga is switched on and after every reset. It sets up the system so that it is usable from Workbench, and may be customised by those who have unusual hard or software requirements.

Scanner – A device which converts an image on paper into a digital form that is suitable for the computer. The digital image can then be retouched or manipulated. It can used in a paint package such as *Deluxe Paint*, even Or Incorporated in desktop publishing document

Library – the Amiga has many special features, and programs are already present in the operating system to make use of these features. These programs, or library functions, may (and should) be used by applications programs, obviating the need for each programmer to write a similar set of routines.

ACUTE PROBLEM

DTP

How do I type in French or other languages, with all their accents, in *PageStream 2.2*? I've tried changing keymaps, but that doesn't work. Currently I have to draw the accents using the freehand tool, a most tedious task indeed! Am I missing something?

Ola Johnson
London N11

It sounds like you are missing the *PageStream Manual*, Appendix C: Special Characters. This section of the manual describes very clearly the moves that are required to type foreign characters and any other character that is not on the keyboard. ***JW***

SWITCH BOX SCANNER

HARDWARE

Jeff, I see that you have a problem connecting your Epson GT-6500 scanner to the Amiga using a switch box. I had the same problem. The stupid length (1m) of the supplied cable didn't exactly help either!

I think you will find that the problem lies with the cable between the switch box and the Amiga. If the cable is a standard printer cable, then all the wires may not be connected. It could also be the switch box. Sometimes all the connections are not linked up, just those needed to work with a standard printer interface.

I had to visit a number of stores before I found a cable with all wires connected. Then it was just a simple matter of using this cable between the switch box and the computer, and connecting the scanner to the switch box using the lead that came with the scanner. At present I am using my switch box with an Oki laser printer, a Canon BJ-10e bubble jet printer, a sound sampler and the Epson scanner. All work just fine.

Stephen Bennett
Netherton
West Midlands

It wasn't a switch box I couldn't get to work with the Epson scanner, it was a multiport card. The reason it won't work with the GT-6500 is because their parallel interfaces are of the bi-directional kind (but the standard Amiga parallel port is), which is a fancy way of saying that all the wires are not connected, only those needed for printing. As you have pointed out (thank you), make all the right connections and it will work fine. ***JW***

INVISIBLE EPSF

DTP

I would like to use clip art drawn in *ProDraw* with *Final Writer*. I saved a page from *ProDraw* as an EPSF, but when I imported this into *Final Writer* it comes up as a crossed-out box. Upon changing the Screen Display option to Full Image, *Final Writer* appears to try to render it,

THE CENTRE OF TEC

WTS ELECTRONICS LTD, CHAUL END LANE, LUTO



Amiga 1200 Packs

- 32-bit 68020 Full power
- On site warranty
- Two Python joysticks
- Free Paint package software
- Mouse mat

A1200 Standalone	£274
A1200 with 20 MB	£354
A1200 with 40MB	£399
A1200 with 60MB	£424
A1200 with 80MB	£439
A1200 with 120MB	£509
A1200 with 200MB	£549



Amiga 4000 Packs

- AGA Chip set
- 68030/40 processor
- Co-pro option
- 2MB/4MB RAM

A4000 030 with 80MB HD & 2MB	£899
A4000 030 with 80MB HD & 4MB	£999
A4000 030 with 120MB HD & 4MB	£1069
A4000 040 with 120MB HD & 6MB	£1999

A1200 Dynamite pack

Simply add to pack price	£45
CD32	£284

A1200/A600 Hard Drives



- Easy to install upgrade kits
- Full instructions and cables where necessary
- All drives supplied with formatting instructions and software
- Free fitting available - phone for details

20MB HD Upgrade Kit	£85
40MB HD Upgrade Kit	£135
60MB HD Upgrade Kit	£154
80MB HD Upgrade Kit	£169
120MB HD Upgrade Kit	£199
200MB HD Upgrade Kit	£329

A1200/A600 Memory Upgrades

A1200 PC 1204 4MB + clock (Co-pro option)	£198
ProRam 2MB PCM-CIA A600/A1200	£118
ProRam 4MB PCM-CIA A600/A1200	£172
ProRam 1MB A600	£34
A1200 Real Time Clock	£17

Amiga 500 Hard Drives



High Quality GVP Hard Drives

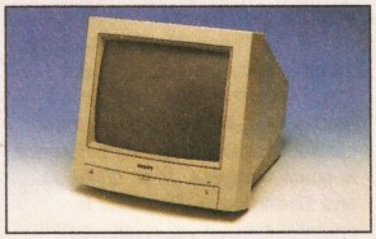
	A500	A1500
120MB	£429	£382
500MB	£989	£942
1GB	£1189	£1142

Internal Hard Drives for A500

- Easy to install - Full instructions
- ICD technology

Pro Internal 20MB hard drive	£155
Pro Internal 40MB hard drive	£245
Pro Internal 80MB hard drive	£295
Pro Internal 120MB hard drive	£325
Pro Internal 200MB hard drive	£405

Monitors

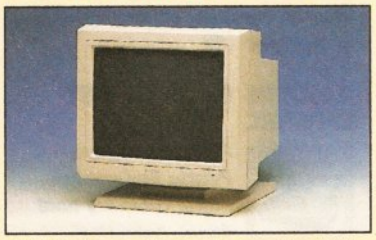


Philips 8833 MKII Monitor	£189
Commodore 1084s	£174

- When purchasing with an Amiga deduct **£10** from above pricing

Dust cover for the above	£5

SVGA /Multisync Monitors



- 14"/20" Super high resolution colour display
- Professional IBM compatibility
- Complete with cable
- Full UK warranty
- Tilt & swivel stand

A1200 SVGA Monitor (Displays high productivity modes)	£228
A1200 SVGA + Monitor (Medium resolution, displays all modes high and low)	£269
A1200 SVGA + Monitor (High resolution, displays all modes)	£364
A1200 SVGA plus 20" Monitor (Displays all modes ideal for DTP, CAD etc)	£1044

Workstations



- Ergonomically sound
- Facilitates up to three external floppy drives
- Made in the UK
- Strong and robust
- Aesthetically pleasing
- Keep your desk neat and tidy
- Supplied complete and assembled with free mouse mat

A500 Workstation	£36
A600 Workstation	£36
A1200 Workstation	£36
Workstation Coverall dust covers	£5

Peripherals



100 Capacity lockable disk box	£5.99
Squick mouse	£13.99
Mouse mat	£1.99
TDK high quality DSD (10) disks	£9.99
Computer Mall DSD (10) disks	£6
Jet Fighter joystick	£13.99
Apache joystick	£6.99
Python joystick	£9.99
Zipstick joystick	£14.99
Screen Beat speakers	£29
Zi-Fy speakers	£36
A500/A600/A1200 Dust covers	£4.99
A500 Modulator	£36
Rendale 8802 FMC Genlock	£169
Supra 2400 Modem	£89
Supra Fax Plus Modem	£148
Supra v.32 BIS Fax Modem	£358

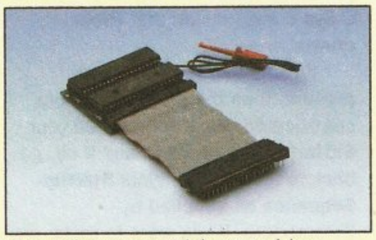
Scanners



- Allows image processing in a useful and unique fashion
- Comes complete with operation manual
- One of the fastest growing applications for home and professional users
- High specification coupled with cost effective pricing
- **Power Hand Scanner**
- 64 greyscales 100-400 DPI
- Thru'port to printer
- Fully compatible with Delux Paint 4, etc.
- Advanced software

Power Hand Scanner v3.0	£96
Power Hand Scanner Colour	£229

Pro ROM Swapper



- Swap between Kickstart chips
- Fits A500, A500+, A600,A1500
- Auto swapping via keyboard control
- Flexible cable allows the swapper to work in conjunction with accellerators etc.
- Simple to fit - full instructions

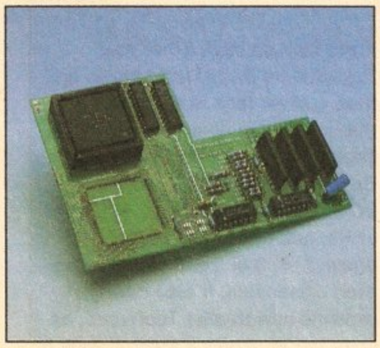
Pro ROM Swapper	£18
Pro ROM Swapper + 1.3ROM	£37
Pro ROM Swapper + 2.04ROM	£40
Workbench 2.04 plus manuals	£49

INICAL EXCELLENCE

Est. since 1984

, BEDS, LU4 8EZ TEL (0582) 491949 (6 LINES)

Pro Agnus 2MB

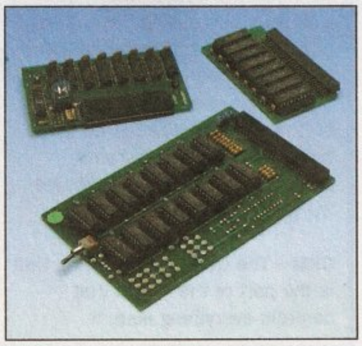


- Provides a full 2MB of Chip Memory for the Amiga 500 and A1500/2000
- Designed and built in England
- Supplied with 8375 Obese Agnus
- Includes 2Mb Memory on board in the form of low power Zips
- Allows the processing of elaborate animation and sound sampling
- Provides the same max. chipmemory as the A3000/A600 &500+
- Increases addressable memory space from 9MB to 10MB
- Complete with full instructions and flying leads
- British made

- Pro Agnus 2MB **£139**

(Free fitting available - Phone for details)

A500 Memory Expansions



A500 Pro-RAM 0.5 Meg. Upgrade

- Allows 1MB software to run
- Chip memory compatible
- British made

- Without clock **£16**
- With clock **£19**

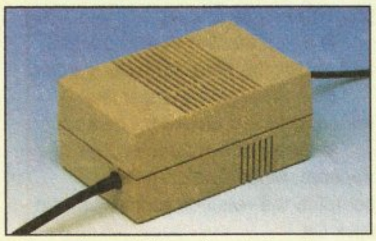
A601 for A600 £36

A500 Pro-RAM 1.5 Meg Upgrade

- Gives a full 2Mb of memory **£74**

A500+ 1Mb Meg Upgrade £29.95

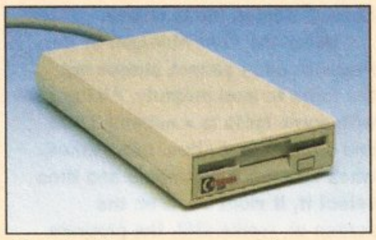
High Current Power Supply



- Allows the addition of peripherals without damage to computer or power supply
- Why risk damaging your expensive kit when one simple investment will ensure total peace of mind now and for the future
- Switch mode design
- Full crow bar projection
- British made

A600 Power supply unit	£44.95
A500 Power supply unit	£44.95
A590 Power supply unit	£44.95
A1200 Power supply unit	£54.95
A2000 Power supply unit	£99.95

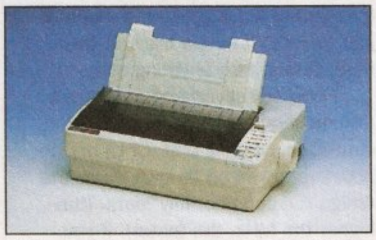
Cumana 3.5" External Drive



- High Quality
- Renowned and proven reliability
- Top notch specification
- Anti-click
- Long moulded cable
- Slimline design
- High impact plastic

Cumana external drive	£57
Cumana external drive + 100 capacity disk box	£60
Cumana external drive + 100 disk box + 20 blank disks	£66
A500/A500+ Internal replacement disk drive	£46

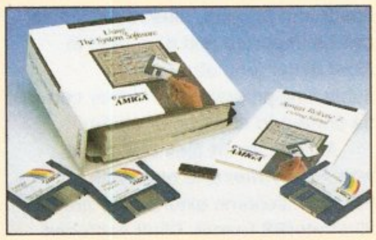
Printers



- High quality premium range of Amiga printers
- Two year manufacturers warranty.
- Complete with cable to Amiga 500
- Citizen registered for Dealer plus service

- Swift 1200+ **£129**
  (9 pin, 80 column, 144 CPS draft, 30 NLQ, 4KDB Buffer)
- Swift 90 Colour **£168**
  (9 pin, 80 column, 216 CPS draft, 54 LQ, 45dB quiet mode)
- Swift 200 **£186**
  (24 pin, 80 column, 216 CPS draft, 72 LQ, 43dB quiet mode)
- Swift 240 Colour **£259**
  (24 pin, 80 column, 240 CPS draft, 80 LQ, 43dB quiet mode)
- Swift Pro Jet **£299**
  (80 column, 50 nozzle print, 360 CPS draft, 120 LQ, HP emulation 8KB buffer, 3 fonts, vertual lazer quality)

Chips and Spares



- WTS have sole distribution rights from Americas biggest Commodore chip distributor

Workbench 2.04 Kit (includes manuals, disks & chip)	£78
Kickstart 2.04	£24
Kickstart 1.3	£29
Kickstart ROM Swapper (Swap between Kickstarts)	£18
Fatter Agnus 8372	£29
Obese Agnus 8375	£39
High Res Denise	£24
1MB x 9 Simms (3 chip)	£29
1MB x 4 Zips	£14
8520 CIA	£9

SALES HOTLINE 0582 491949 (6 LINES), 0480 471117 (24HR), FAX ON 0582 505900

Credit Card ordering by phone is easy. Simply phone our sales hotline quoting your credit card number., expiry date, name and address and the products you wish to order and we'll do the rest. Alternatively write the above details on your letter when ordering by post.

When ordering by post in cheque form please write your cheque card guarantee number on the reverse of the cheque and send along with your order. Postal Orders are also accepted.

NO DELIVERY CHARGES TO UK MAINLAND. MINIMUM ORDER AMOUNT £15.00.
Should you wish your order to be sent by courier service please add £5. This method includes Comprehensive insurance.

WARRANTY: One year return to base (excluding chips).
ONE YEAR EXTENDED WARRANTY: Available on all products (excluding chips) at 10% of purchase price when ordering.

WHERE TO FIND US!

Head Office
WTS Electronic Ltd
Chaul End Lane
Luton
0582 491949

Computer Mall Bedford
No.16 Downstairs
The Harpur Centre
Bedford
0234 218228

Computer Mall St. Neots
No.6
Priory Mall Shopping Centre
St. Neots
0480 471117

Computer Mall Hertford
49 Railway St.
Hertford
0992 503606

Computer Mall Dunstable
84 High Street North
Dunstable
Bedfordshire
0582 475747

but nothing is displayed. I tried to print it, and again nothing gets printed. I have tried different combinations of PostScript output from *ProDraw*, all to no avail. Can you help?

Chong Hin Chee
Cottingham
North Humberside

What we have here is a confusing file format problem. There are two types of EPSF (Encapsulated PostScript File): full EPSF (what ProDraw creates) and a sub-format of EPSF, which is known as Illustrator88 because it is the format used by the famous Mac/PC Adobe *Illustrator* program.

Full EPSF files can be imported into *Final Writer* (and other Amiga publishing programs), but cannot be displayed and can only be printed on PostScript printers. Illustrator88 files can be imported and displayed in *Final Writer* (and other Amiga publishing programs), and they can be printed to any type of printer.

All the clip art files that come with *Final Writer* (the ones with the **.epsf** filename extensions) are in Illustrator88 format. What confuses the issue is that graphics in Illustrator88 format are normally given either a **epsf** or **eps** filename extension, just as full EPSF files are.

Apart from EPSF, the only other formats *ProDraw* saves files in, are its own FOLIO and CLIP formats, neither of which can be imported into *Final Writer*. To create clip art that *Final Writer* will import, display and print to any printer, you will need to be able to save your work in Illustrator88 format. I'm afraid there is no small, cheap utility that can convert from CLIP to Illustrator88 format. Your only real option is to buy *Art Expression*, Soft-Logik's equivalent to *ProDraw*, which is able to save structured graphics in Illustrator88 format.

Art Expression does not directly import CLIP format graphics, but a utility is provided to convert CLIP to IFF-DR2D, and these can then be imported into *Art Expression* and saved as Illustrator88 graphics. ***JW***

SPEED FREAK



Why are all these accelerators and FPUs (50MHz, 68882, etc) being advertised separately, and/or depend on each other? All I really need is a clock, and perhaps the fastest speed an A1200 can ever run *PageStream 2.2* at if I am to use the trap-door for this clock. I currently use a 2Mb smart card, which sticks out awkwardly, but which I am now used to.

Ola Johnson
London N11

Well, a clock is not going to make your Amiga run more quickly, not even if it is ticking faster. A clock is just a clock. It keeps track of the time. Doesn't do anything else.

FPUs are advertised separately from accelerators because a faster central processing unit (CPU) on the accelerator will on its own make the Amiga run considerably faster (the higher the MHz, the faster). If you want even greater speed, you can fit the optional floating point unit (FPU), which comes in two flavours: 68881 and 68882, the latter being the much faster (and more expensive) version. Any program that works heavily with calculations and consequently takes a long time to produce a result (typically things like ray-tracing, printing, any type of number crunching, and desktop publishing strangely enough), will benefit from an FPU.

It is worth pointing out that some 32-bit memory in your trap-door expansion slot will on its own double the speed of your A1200. An FPU on that memory board will give a little extra speed again. But if you want to fly like the wind (faster than the A4000/030 for example), you need to fit a good accelerator *and* some 32-bit memory. A 68030 CPU sulks and drags its heels unless it has 32-bit expansion memory to play with.

Your smart card is 16-bit memory and actually has the effect of slowing the A1200 down slightly. ***JW***

DTP WITH PAGESTREAM



Having recently been made redundant. I decided to buy an A600 (80Mb hard drive with 1Mb trap-door expansion) to pass my spare time. Having found the more serious applications of more interest, I decided to buy *PageStream 2.2* with the intention of doing a bit of DTP to earn some cash.

How do you get *PageStream* to display on a standard portable colour TV? Unlike its sister program *Art Expression*, there is not a Change Screen Mode option.

Using the *Font Manager* in *PageStream*, I cannot always get the fonts to load properly. All I get with some fonts is a number 1000 and a list of font sizes. Sometimes when I do get a font name and then select it, it wont show on the screen or, worse still, the program freezes. Could you please explain the font selection procedure for *PageStream*, and what fonts it will support? Is my problem to do with selecting the font path?

Having produced artwork ready for printing and telephoned every DTP bureau in Sheffield, to my horror none of them supports Amiga files. Scanning back issues of *Amiga Shopper* I found an Amiga DTP bureau (in issue 24) called G A Graphics Ltd (071-275 7134), but having tried the number on several occasions I get a BT recorded message telling me that the number is not available. (Double checking the number with Directory Enquiries, the correct number was indeed printed.) So can you recommend an Amiga DTP bureau, or anybody who provides a printout service via laser printer?

After reading your review in issue 24 I bought *Art Expression* 1.04. You mentioned the various exporting features, from different computer to different computer. My problems will all be solved, I thought. I wanted to create a letterhead for a friend and then export in Adobe *Illustrator* format. The problem is that I had to have text filled in different patterns (bricks and squares) and I could not manage this in *Art Expression*, only gradient fills. So I ended up back in *PageStream* creating the letterhead.

I understand that I cannot export from *PageStream* to Adobe Illustrator, that is why I bought *Art Expression*. But when I tried to import my *PageStream* file into *Art Expression*, with the intention of exporting in Adobe *illustrator* format, I cant.

How do I do what I want to do?

Darren Beck
Sheffield

If you look up page 10 of your *PageStream QuickStart Manual* and have a close look at it, you will see that it tells you about the **SCREEN=** ToolType that must be set to either *Custom* or Workbench, the **INTERLACE=** ToolType to either Yes or No, and the **COLORS=** ToolType to either 2, 4, 8 or 16. If you have an even closer look, it also clearly explains how to alter ToolTypes, as does the *Workbench Manual* (look it up in the index).

PageStream's **Font Manager** is a little tricky to get used to. The procedure is as follows:

- Go to the **Set Font** requester and select the **Font Manager** gadget.
- In the new requester that appears, select the **Add...** gadget.
- In the new requester that appears, select the drawer that contains the required fonts and then click OK.
- When the directory drawer has been read, click on that drawer in the list on the left-hand side of the requester that is now on the screen. A long list of fonts will be appearing in the right-hand window, if everything has gone smoothly.
- Now select the **Update** gadget.
- Finally, select the **Save Default** gadget.

The fonts in that drawer should now be available to you in the **Set Font** requester that reappears.

Sometimes *PageStream* gets its fontlist file in a twist (the one named **FONTLISTv2** inside the **PSFonts** drawer). There should be another file in there named **FONTLISTv2.HD**. Delete the **FONTLISTv2** file and make a copy of **FONTLISTv2.HD**, but name it **FONTLISTv2**. This (upon re-running *PageStream*) will reset *PageStream's* fontlist to the default, enabling you to go to the **Font Manager** and start again from scratch.

Your final problem is reassuringly easy to solve for once. You do not need an Amiga-specific output bureau. Create your work in either *Art Expression* or *PageStream*, whichever suits you best. Following this you then print your work as PostScript, but send the output to a file on disk instead of the printer. Give the last part of chapter 6 in the *PageStream User Manual* a good old read and it will tell you all about PostScript, including advice on how to give the files to a Mac or PC output bureau. The same goes for the last part of chapter 7 in the *Art Expression User Manual*. ***JW***

JARGON BUSTING

FPU – a Floating Point Unit is a chip that will work in conjunction with your computer's CPU to carry out complex, and mathematical tasks. Carrying these calculations out in hardware rather than software greatly speeds up the running of certain programs, particularly those that make use of 3D graphics.

CPU – The Central Processing Unit is the part of the Amiga that controls everything else. It executes program instructions and performs general mathematical computations.

Accelerator – a device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a much higher speed. An accelerator is useful for a number of calculation-intensive applications, such as 3-D rendering or graphics manipulation programs such as ADPro.

BASIC QUERY

How can I get started using the BASIC language from within DOS? I would like to enter the listings that you publish in your magazine, but DOS does not seem to understand the listings that I enter. How can I get BASIC commands to work like the Commodore 64 and Spectrum etc ?

Do I need files with Screen Open, Len and so on listed on them?

David Craven
Strensall
York

I'm afraid you're barking up totally the wrong tree, David. Both the Commodore 64 and the Spectrum have their BASIC programming languages built into their *firmware* (the chips inside the machine) and can therefore be accessed at any time. The Amiga, however, does not have BASIC built into it, so it therefore has to be loaded from disk as a program. Commodore no longer bundle a BASIC programming language with the Amiga, so I'm afraid you'll have to buy one yourself. By far the best (and one of the most powerful) BASIC language available for the Amiga is AMOS Professional which includes all the commands you'd expect from a modern BASIC language, plus a lot of extra Amiga-specific commands that will allow you to write anything from utilities to complete games. Check the advertisements in this issue of *Amiga Shopper* for the best price on *AMOS Pro*. Failing that, give Europress Software (the company that produces *AMOS Pro*) a ring on 0625 859333. ***JH***

TIGHT SQUEEZE

When attempting to use the software on the attached coverdisk (issue 31), the message "Insufficient Space on disk" is displayed. This happens no matter which icon is selected. I have tried splitting the icons on to two separate disks, but this has made no difference whatsoever. Do I need a hard drive to use your coverdisk or would a second drive solve the problem perhaps?

Ken Armstrong
Lisburn
Co. Antrim

Virtually all the files on our coverdisk have been archived to allow us to squeeze as many programs on to the disk as possible. Unfortunately this does mean that in order to use the programs, they must be dearchived first which is handled automatically when you click on the icons attached to each archive. Whenever a program is dearchived, the archiving program that we use, *LHA*, dearchives the programs into the same directory as the archive itself. As a result, you'll get the error you mentioned if you attempt to dearchive a program directly on to the coverdisk. The best way to overcome this problem is to format a blank disk and then transfer a single archive on to it and dearchive the program on to that. Once the archive has been decompressed, delete the original archive file from your blank disk and transfer another archive across and repeat the process. ***JH***

CD GOINGS ON

I have an A500+ with a GVP hard drive and an A570 CD-ROM. As I use the hard drive quite often, I'd like to leave it connected to the computer and daisy chain the CD at the end.

With the release of CD32, are Commodore still going to bring out a SCSI interface for the A570? If not, will the CDTV SCSI interface work with the A570?

S White,
Fife
Scotland

Well, you can't connect an external hard drive and CD-ROM drive to the left hand side of an A500 without a minor miracle. So forget it. The CDTV SCSI interface will indeed plug into an A570, although it hangs out the back by about four inches. I doubt if Commodore will bring out a separate interface for the A570, basically because they didn't even release the CDTV version – that was done by Checkmate Digital.

Bear in mind that there is no way on this earth that your A570 will run any of the forthcoming CD32 titles. Commodore? Backstabbers? I'm not suggesting such a thing for one single moment. Honestly! ***PM***

COLD COMFORT

My machine is an A1500 running Kickstart 1.3 (Workbench 1.3.3 plus ARP) with a GVP hard drive card and 2Mb of extra RAM. The only software which tends to lock things up is *Deluxe Music Construction Set*, and that is pretty rare. But I do have a couple of oddities.

***Edwords* comes up with a possible virus warning and the message Virus Alert – Cold Capture $000FE7B0. I tracked down a reply to a similar problem, and duly contacted the software supplier. I still don't know what the problem is.**

***VirusChecker 6.25* crashes my machine savagely, giving $00000003.0025C028 before demanding a reboot. Version 6.22 (from the same disk as *Edwords*) runs without any problems.**

N P Grundtvig
Vilvoorde
Belgique

The problem is that relatively few people have Kickstart 1.3 and 1Mb of Chip RAM, as you have. This means that programmers frequently get it wrong when trying to write software for the Amiga, as it's the rare machines that cause problems. You have put the **–r** option after the **setpatch** command in your **startup-sequence**, haven't you? Also, having a PD bootblock that brings down Chip RAM to 512K can also be beneficial when running older games. Hope that helps. ***PM***

CIA PLOT

My machine is an A500+ with Kickstart 2.04 and 1.3 via a ROM sharer, 2Mb Chip RAM, 8Mb Fast RAM, a Power Computing dual drive, a GVP 52Mb hard drive with a PC286 emulator, and a CSA Mega Midget Racer accelerator. Plus a couple of printers, a monitor, a sampler and switch box.

My machine has developed a fault. When I load and run one program, all is fine until I quit. Then the mouse pointer freezes and the machine has to be reset. Which doesn't help much, as when I click on an icon the machine locks up again. Switching off for an hour corrects the fault, but nothing else does. And whenever I try to edit the startup-sequence, up pops the message "someone is attempting to alter the startup-sequence".

At first we thought the lock ups were due to a faulty CIA (Complex Interface Adaptor) chip, so we replaced one (the "A" chip) but the fault remained.

Anyway, after whipping everything apart and still no joy, we tried swapping the CIA chips, reluctantly, as we thought they were different in some way. This has cured the fault but the startup message still appears – what should we do?

Also, I am thinking of getting an A1200 or even an A4000. With a Parnet device and software, would it be possible to link the two computers together (A500+ and A1200 or A4000) and to use them together. For instance, could I play a game on the A500+, and use Parnet to transfer information from the A500+ GVP hard drive to the A1200?

R M Pitts
Meols
Merseyside

Boot the machine from a floppy disk version of Workbench. This will deactivate the program that is stopping you editing your **startup-sequence**. Then you can edit the hard drive **startup-sequence** and remove the bit that runs the virus checker – it may just be in the WBStartup drawer, but I doubt it somehow. Also buy a new CIA chip (they only cost about £12) to slap into the B socket. In fact, CIA chips blow quite commonly on the older Amigas – your ROM sharer probably isn't helping things. Such devices do put a bit more wear and tear on a machine.

It would be nice if you could use *Parnet* like that, but no. In order for *Parnet* to operate, both machines need Workbench to be up and running. Nine times out of ten, games deactivate Workbench, so you can't do it. ***PM***

MEMORY GLANDS

I'm sure that when I first got my A600, the memory meter at the top of Workbench showed something like

JARGON BUSTING

Basic – Beginners' All-purpose Symbolic Instruction Code is what is known as a high-level programming language, much favoured by micro-computer users. It combines a fair amount of power with ease-of-use.

CD-ROM – Compact Disc Read Only Memory is the latest technology in storage devices. A CD can hold over 600Mb of data, compared to around 100Mb for a hard disk and 880K for a floppy disk. The big disadvantage is that users cannot store information on a CD, only retrieve it, but this doesn't stop CD from being a potentially revolutionary medium.

CIA – Complex Interface Adaptor. The two user-programmable input/output ports. They are used to control the serial and parallel ports, the keyboard and disk drives.

900,000 graphics memory and 900,000 other memory. Now that I have plugged in an A601 1Mb memory expansion, I just get 1,282,224 graphics memory and zero other memory. Without the expansion fitted, I have 757,936 graphics memory and again, zero other memory.

M J Smallwood
Redditch
Worcs

There are two faults. One of them is inside your head, because bog standard A600s do not have *other* memory without having a PCMCIA card slapped into them. Never have done, never will do. You've got defective memory.

Mind you, so has your RAM expansion. I would get the board replaced by the suppliers, as it is clearly supplying only half a million extra bytes (512K) rather than the full 1Mb. ***PM***

PLANAR THAN PLAIN

HARDWARE

Although no one seems to know exact details, it seems apparent that the CD-ROM drive for the A1200 will fit into the trapdoor. If this is so, will Commodore have the common sense to incorporate a memory expansion within the interface? If not, then any memory or accelerator boards I buy now will just become expensive scrap in just a few months time, as I intend buying a CD-ROM drive to play CD32 games.

Does this mean that I am limited to memory expansion with PCMCIA cards? How much performance loss can I expect? I intend to use *Hyperbook* to produce graphics based titles and I find that the internal 2Mb of memory is soon used up when using *Art Department*.

I see that external IDE hard drives are available for the A1200. Could a CD-ROM drive be connected to the PCMCIA expansion? Will such a device become available from a third party manufacturer? If not, I expect there will be a lot of very angry A1200 owners who have splashed out on memory and accelerator trapdoor expansions, only to find that they cannot join the CD revolution.

A F Clitherow
Chivenor
North Devon

The only place where a CD^{32} Planar chip can be connected to the A1200 is the trapdoor slot. I suspect that is why the A1200 CD-ROM interface is trapdoor based. As for performance loss, there isn't any if you use a PC-MCIA RAM expansion as opposed to a trapdoor RAM expansion. You just don't get the 100% speed up from having 32-bit fast RAM. You're using *AdPro* with only 2Mb? 4Mb is a minimum for serious usage and even more is necessary when dealing with large scanned images.

Yeah, but if an A1200 CD-ROM interface doesn't have a Planar chip, then it's not 100% CD^{32} compatible, is it? As for the CD revolution, it's taking its own sweet time. If you want to play CD games, get a CD^{32}. It's going to be a lot cheaper and much more compatible than an A1200 with CD-ROM drive. ***PM***

MEMORIES ARE MADE OF THIS

HARDWARE

Can an additional 1 Mb (+ clock) be added to my 1Mb A600 machine? What is the maximum trapdoor RAM for the A600? What books do you recommend for the Shell? Can the Workbench import graphics? Would Blitz Basic support mainly maths based programs?

Derick Smith
Dundee
Scotland

Yes, and that will bring you up to the A600's trapdoor memory expansion limit. *Mastering AmigaDOS vol I and II* should cover just about anything you'll need to know about the *Shell*.

I'm not really sure what you mean by Workbench 'importing' graphics. Workbench handles all files (including graphics files) in the same way. In this respect graphics file house-keeping operations are the same as any other. In conjunction with *CrossDOS* you can also copy non-Amiga graphics files from MS-DOS disks to the Amiga but Workbench itself doesn't actually convert the PC type graphics file formats (pcx and so on) to Amiga IFF type automatically. If this is what you meant then don't worry – there are plenty of utilities around for doing these types of graphics file conversions.

All Basics, including Blitz Basic, have easy to use maths handling facilities that are fine for most jobs. If you'd given me just a little clue as to what exactly you want to do I could perhaps have given you a better answer! ***PAO***

DIGITAL DELIGHT

PRINTERS

I've bought an old Digital LN03+ laser printer and the only way I can get it to print text is from a text editor, using the IBM_ColourJet printer driver. It will not print pictures, nor text created with *ProWrite* or *Wordworth*. Help!

Neville Tanner
London

On Fish Disk 164 there is a LN03+ printer driver. I don't know how well it works, but it must be worth a try. Contact a PD library. ***JW***

REACHING THE PROVERBIAL DEAD END

GENERAL

We owners of older machines (I have an A2000 with Workbench 1.3) are continually being asked to upgrade to Workbench 2. How do we do that when there are no upgrade kits available? I've tried loads of suppliers only to be told, despite the fact that they advertise the upgrade, that they have no kits in stock?

D.A. Smith
Warrington
Cheshire

The reason that no one has upgrade kits is that Commodore no longer seem to be supplying them. I believe however that WTS Electronics have the chips themselves in stock, so give them a ring on 0582-491949 and see what they suggest.

As far as the disks and manuals are concerned, one solution, if all else fails, would be to upgrade your hardware and then install WB2 using borrowed disks. OK, so this is not strictly legal, but let's face it – if Commodore offer an upgrade path and then appear to indefinitely pull the plug on legitimate supplies of that upgrade, then I for one would agree that they only have themselves to blame! ***PAO***

BACK TO BASICS

CODING

I've been a keen Basic programmer since the days of the Sinclair ZX spectrum. When I bought my Workbench 1.3 based A500, I obtained both GFA and HiSoft Basic. Initially both worked fine but since I've upgraded to a 68020 and Workbench 2.04, GFA Basic now gives all sorts of software failures. Also a graphics utility written in GFA Basic now occasionally locks up. Most other programs work fine and Hisoft Basic gives no problems. Any idea where the GFA problems might lie?

N. Malton
Peterborough

Your upgrade has produced an effectively non-standard A500 which has incurred the wrath of the fairly well known GFA gremlins. As I understand it, GFA Basic 3.5, the last major release, doesn't work on the A3000 or A4000 machines properly (although it apparently runs OK on the A1200).

The bad news is that, to the best of my knowledge, there are no planned GFA upgrades or fixes to eliminate these problems. This being so, the only realistic advice I can give you is to move over into the Hisoft Basic camp and stay there. Hisoft have a good reputation for supporting their products! ***PAO***

KEYBOARD MIX-UP

BEGINNERS

I recently got an A1200 with Workbench 3 but some keys on the keyboard are mixed up. Any ideas?

P. S. Wright
Aldershot
Hampshire

Yes, somehow you've got the wrong keymap selected. Open the **Input Preferences** tool and on the right hand side of its window you'll see a **keyboard type** selector. Select the **British** keymap (if, that is, your machine has a British keyboard).

If by some chance you've got a hard disk and have failed to provide

JARGON BUSTING

Keymap – one of several files that are used by the Amiga to translate key presses to the relevant characters for a given country, since different countries have different layouts for their keyboards.

DEVS – Is a directory on the Workbench disk containing the 'device drivers' for various Amiga peripherals such as printers.

Printer driver – a program that sits inbetween any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.

MS-DOS – Microsoft Disk Operating System. It's a bit like AmigaDOS - only many commands are internal. Shell editing is crude prior to Release 4.

Shell – a method of communicating with the Amiga's operating system via the keyboard rather than the more usual mouse and windows method of Workbench.

a suitable choice of keymaps when Workbench was first installed, you will, prior to the above operation, need to copy the correct keymap files to your system. To do this, just open the Keymaps drawer on the Workbench 3 'Storage' disk and open the **Devs/Keymaps** drawer on your installed Workbench. To copy additional keymaps is just a simple matter of dragging their icons from one window to the other. ***PAO***

NO ANSWER BUT...

MUSIC

Some time ago Steven Bird wrote to Amiga Shopper with a Yamaha SY85 sample format question that he sent me. The Yamaha Research & Development team and I have been, faxing and telephoning around the world looking for information. Apologies for the delay Steve, but you have not been forgotten. At this very moment we're waiting for Yamaha Japan to give the OK on format disclosure, so hopefully it won't be too long before we can publish the technical details you need. Keep watching this space! ***PAO***

GAMES IN AMOS

CODING

I am currently writing a game in AMOS 1.35 which is to use a four player joystick adapter in the parallel port. Although it's easy enough to read the directions of the two joysticks (at $bfe101), I can't find where the fire button signals are stored. I know that they use the BUSY and SEL pinds of the port, but I do not know the address that these are stored at.

2. I have also been programming in C lately and would like to know if there is a PD or shareware program available to help design a WB2-look interface using GadTools.

3. When generating random numbers in C I have used the RangeRand function. I have noticed, however, that when the program is run, it generates the same numbers each time. Is there a way of generating a set of random numbers with a seed taken from the timer, like Randomise Timer in AMOS?

Paul Faulkner
Woodley
Reading

1. The register you're after is at $bfd000. If you'd like to find out more about this, I can recommend the *Amiga Hardware Reference Manual, Edition 3*, which contains a full breakdown of what all of these hardware registers do.

2. Yes, there is, and its called *GadToolsBox*. Its an excellent product. Also, Commodore sell an excellent program called *ToolMaker* which does the same thing. Both programs write the C source code for you. *Toolmaker* actually generates running applications!

3. You can indeed use the clock to seed the random number generator. Here is a small example in standard ANSI-C:

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

void main(void)
{
  srand(time(NULL));

  printf("Here is a random number
from 0 to 9: %ld\n", (rand() %
10));
}
```

When called, it shows a number between 0 and 9 on the screen and produces different results each time. ***TS***

HEAT STROKE

HARDWARE

Having fitted a PC1204 with 33Mhz FPU to my A1200, I find that the board's RAM chips and the FPU generate a lot of heat, which is clearly felt through the trapdoor (and computer table). I have been told that this is normal, and that some high speed CPU/FPU's can get hot enough to burn yourself on. However, the trapdoor area of the A1200 is enclosed. Am I worrying unnecessarily, or is heat dissipation likely to cause problems? I am worried about leaving my machine on for long periods, but this is necessary when using *Imagine 2.0* and *VistaPro 3.0*. Finally, if I upgrade to a 50Mhz 68030 and 68882, both of which will presumably generate a lot of heat, will this be OK?

If dealers who are trying to sell me these boards say that heat dissipation is not a problem, why do big box computers sport fans and heat sinks? I hope that you can put my mind at rest before I invest in an accelerator board.

Mr Davis
Street
Somerset

This is a tough one to answer. RAM chips and fast CPUs can indeed get sufficiently hot for you to burn yourself under perfectly normal conditions. A lot of the A1200 accelerators I have seen do have heat sinks to try and spread this heat over a wider area and dissipate it more effectively. Although you may think that the entire case is enclosed, it is a good idea to stand your A1200 on a firm solid surface, such as a desk. If you were to leave it on the carpet, then you could run into problems. It is important that a good air flow underneath your Amiga can happen. It's OK to feel the heat through the trapdoor.

If you upgrade to a 50Mhz 68030 and '882 FPU, they will indeed get hot, but those chips are designed to function at 50Mhz without heat sinks, and so long as they have reasonable ventilation, there will not be a problem.

Larger computers, such as the A4000, have fans because it is possible to add a number of expansion boards to the machine, and all these together in an enclosed space can cause heat problems. With regards to heat sinks, the 68040 is a good example of a chip which runs alarmingly hot, and *does* require a heat sink strapped to the chip. This is why there are no '040 expansion boards for the A1200 currently, as it is hard to get a thin enough fan to strap to the top, and get the required air-flow. ***TS***

JARGON BUSTING

RAM – Random Access Memory, so called because any part of it can be accessed immediately, rather than having to search through from the start of memory to the point of interest. RAM is used to hold programs while they are being executed and temporary data. The contents of RAM are lost when your computer's power is switched off.

Sample – a digital – computerised – representation of a sound. A sample can be sent through a digital to analogue converter (the Amiga has four of these) and be heard as sound. Changing the speed at which the sample is played back changes the frequency (or pitch) of the sound.

ROM – Read Only Memory is used to store essential programs, such as Kickstart and many of the library routines. These do not have to be re-loaded each time the Amiga is switched on because ROM retains its contents without power. However, no new information can be written to ROM, hence the name Read Only.

SOFTWARE FICTION?

GENERAL

Commodore deny its existence. Their official software suppliers haven't heard of it. Numerous software houses/suppliers had it, don't know where you can get it now, or don't do it any longer. What am I on about? Workbench 2.1. What is this fictitious software and where can you get it? Even power computing, who say their XL drive won't work properly without it, have no idea. Help!

Anthont Atack
Bradford

Ah yes, this old chestnut! Workbench 2.1 does indeed exist. It gives proper localisation support, Postscript printer support, preferences updates and numerous other enhancements. It's definitely a worthwhile upgrade, which is why it's sad to see it so hard to get hold of. I believe there was an official upgrade at one point, but I don't think it's available any more. You'd be lucky to find it I am afraid. The best thing is to wait for the next release of Workbench which will be available for all Amiga users, but will require a ROM upgrade for older Amigas. ***TS***

SHAREWARE LEGALITIES

GENERAL

I have been a great fan of your magazine since I brought my A600HD in the spring. I have 3 questions that I hope you can help me with.

1. I am writing a database program based on the popular IBM database, *PARADOX*. My program will have a similar user interface but that is where the similarity will end. The program has a different name and has been written from scratch entirely by myself. If I come up with a good program, I want to release it as shareware. Is it legal to use the idea and basic appearance of another program in a program of my own?

2. I have read in many places that before releasing a program into the public domain, it should be tested on all Amigas. How does someone who has only one Amiga, and no friends with Amigas go about doing this?

3. Is there a way to read the environment of the computer that a program is running on to determine whether the computer is NTSC or PAL and configure accordingly? I am currently using Blitz Basic, but when I get my Developer Upgrade Kit I will be using C. I have an Amiga with Workbench 2.1.

Kevin Roberts,
Quebec
Canada

1. This is always a difficult issue. People have successfully sued on the grounds of "look and feel." As long as the look and general feel of the program is sufficiently different, you shouldn't have any problems. The only risky area would be if you duplicated all the menus and button layouts, for example.

2. If you have access to a modem, you can ask for help on bulletin boards and send people "beta versions" for testing. It's not compulsory to test on all Amigas, it's just a sensible thing to do so that you don't get loads of people writing to you and moaning that it doesn't work on their system.

3. Yes. The information you require is held in the graphics.library library base. Here's a small C program to demonstrate:

```
/*********************************
*******
**
** Display type checker.
**
** By Toby Simpson for Amiga
Shopper Answers
*/

/* Includes */
#include <stdio.h>

#include <exec/exec.h>
#include <exec/types.h>
#include <graphics/gfxbase.h>

#include <clib/exec_protos.h>
#include <clib/graphics_protos.h>

/* Embedded version string */
UBYTE *version =
"\0$VER:displaytype 1.00 (20-Jan-
94)\n";

/* graphics.library base */
struct GfxBase *GfxBase = NULL;

void main(void)
{
 UWORD my_display_flags;

  /*
  ** Open the graphics library V37
(2.04+)
  */
  if (!(GfxBase = (struct GfxBase
*)OpenLibrary("graphics.library",
37L)))
   {
   printf("Cannot open
graphics.library V37\n");
   return;
   }

  /*
  ** Read and display information
about this system
  */
  my_display_flags = GfxBase-
>DisplayFlags;

  if (my_display_flags & NTSC)
   printf("This machine is running
in NTSC\n");

  if (my_display_flags & PAL)
   printf("This machine is running
in PAL\n");

  if (my_display_flags &
REALLY_PAL)
   printf("This machine has a PAL
video crystal\n");
  else
   printf("This machine has an
NTSCvideo crystal\n");

  /*
  ** Close up after us
  */
  CloseLibrary((struct Library
*)GfxBase);

  return;
}
```

I can't say I've been able to test this on a Canadian system to see if it gets the crystal thing right, but it *should* work! Incidentally, this information was gleaned from the include file **graphics/gfxbase.h**. ***TS***

JARGON BUSTING

Archive – A set of separate files may be archived by being compressed together into a single file, smaller than the sum of its parts and hence cheaper to transmit. Upon being unarchived, the original files are restored, retaining any sort of directory structure into which they may have been organised.

SCSI – Small Computer Systems Interface is the standard used for connecting hard drives, CD-ROM drives and tape back-up units to computers.

Chip RAM – the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally a maximum of 512k, newer machines fitted with the fatter Agnus graphics chip can access 1Mb, enabling smoother animations and more screens to be displayed at once. The new A1200 comes with an Agnus chip capable of addressing 2Mb of Chip RAM.

DICE WORRIES

CODING

I am having some problems with *DICE*, supplied on issue 33. It does not seem to want to dearchive to my hard disk.

My other worry is that when I upgrade from *VirusChecker 6.25* to 6.3, I crash on every occasion. It seems to work just fine on a 2.04 machine, but crashes without fail on my A1200.

Mr H E Moncur
Sale
Cheshire

Let's start with your first, dearchiving worry. I would suggest that you try to do this with *DICE*, with the disk in df0:

```
df0:c/lha x df0:dice_part_1.lha
work:dice/
```

This should work. You had left a forward slash off the end, but the above should definitely work. As for *VirusChecker*, I presume you meant 6.30, as 6.3 is an earlier version than 6.25. I cannot see why it does not work, but the program is continually updated, so changes may have been made that caused problems. Stick with a version that you know works, and try upgrading if further releases turn up. ***TS.***

PC TO AMIGA

HARDWARE

I want a hard drive for my A1200, about 80Mb should be enough. These are very expensive, as I have seen PC hard drives which are much cheaper with a similar capacity. I have been told that the only difference between PC and Amiga hard drives are the leads. I have also been told that I can obtain an Amiga hard drive lead for about £15. Would it work or what?

Steven Mathers
Dalbeattie
Scotland

It would work, the tricky bit is that you don't know a lot about hard drives. You got two varieties, these days – SCSI and IDE. A1200 computers were designed to have 2.5 inch, half height IDE drives. These are, as you have noticed, more expensive than 3.5 inch, half height drives as commonly found on the PC and A4000.

If you get the relevant lead (£39 from Software Demon, £22 from Trilogic), then you can indeed plug in a 3.5 inch IDE drive to an A1200. But remember that it's not anchored down to anything – it's free to smash its way around inside your computer. Oh, and you've just invalidated your warranty. Good luck, and may your heads never crash. ***PM***

CD-ROM UPDATES

HARDWARE

I have an A500 with a GVP hard drive and 4Mb of extra RAM. I also have 1Mb of Chip RAM, having soldered the necessary links. I would like a CD-ROM drive. I understand I could buy an A570 and £99 seems a bargain. But then I couldn't use the hard drive because neither it, nor the A570 has a through port. I read the review of *ASIM CDFS*, but there's still a few questions I would like answered.

1) Is it worth getting an A570?
2) Are Commodore going to do any more for the A570?
3) Is the *ASIM CDFS* package any good?
4) Where do I get a SCSI CD-ROM drive to plug into the back of my GVP hard drive?
5) What are all the different CD formats?
6) Could I use IBM PC CDs on my A500?
7) Should I just wait for CD^{32} on the A1200?

R J Carson
Stratton St Margaret
Wilts

1) If you just want to read the information off of a CD-ROM and be able to play music CDs, then the A570 is a pretty good buy. Bear in mind that the only CDs that will work properly on it are the ones written for CDTV, which were crap. Also, before you can fit an A570, you need 1Mb of Chip RAM – I know this doesn't apply to you but it will to other people.
2) Did they ever? No, that's why its cheap.
3) £50 doesn't buy you a lot of software these days, and at the price it is pretty good. You do need a CD-ROM drive (it works with the A570 and CDTV too) but, if you've got one, it's the best set of CD utilities that I have yet seen on the Amiga. I'm sure something better will appear in the future.
4) Amiga dealers rarely advertise such units, but they are very commonly available from PC dealers. Expect to pay around £250 for an external, cased SCSI CD-ROM drive. Usually, they are advertised as CD-ROM drives – you have to phone up an check. Remember, SCSI drives are the same for all computers (Small Computer System Interface is the idea).
5) ISO 9660 is the standard method of storing files and drawers on a disk. This is used by most IBM PC and Amiga CDs. However, some companies design their own formats for storing information on CD – this is much more common on Amiga CDs than on PC CDs.

Apple have their own format, called *High Sierra*, which is a standard of its own. ASIM CDFS can read information from a *High Sierra* disk and copy it on to a different drive, as well as from ISO 9660 CDs. It cannot read digital music data from an audio CD.
6) In the vast majority of cases, no. Just because you can read a file from a disk doesn't mean that you can get it to run on an A500. If you really tried, fitted a nice hardware based PC emulator, like the KCS Bitcon board, and had a spare 600Mb of hard drive space, then you could

E&OE
14/02/94

White Knight Technology

Access
VISA
SWITCH

2.5% Surcharge on Credit Cards only. Not Switch or Visa-Dellta.

PROFESSIONAL AMIGA SPECIALISTS

FAX **0992 714539**

10am-7pm Monday - Friday

White Knight

PO BOX 2395, WALTHAM CROSS, HERTS, EN8 7HQ

A1200 ACCELERATORS

GVP A1230 II 40MHz EC030, Opt. FPU

WITH	0Mb 32-Bit RAM	£ 245
	4Mb 32-Bit RAM	£ 439
	4Mb RAM + 40MHz 68882	£ 565

GVP A1230 II, 50MHz 030, Optional FPU

WITH	0Mb 32-Bit RAM	£ 375
	4Mb 32-Bit RAM	£ 575
	4Mb RAM + 50MHz 68882	£ 719

MICROBOTICS M1230XA

WITH	25MHz 68030 & MMU, 0Mb	£ 225
	33MHz 68030 & MMU, 0Mb	£ 249
	50MHz 68030 & MMU, 0Mb	£ 319

A2000 ACCELERATORS

CSA DERRINGER 25MHz 68030 MMU+ 68881. Holds One 32-Bit SIMM **£ 329**

GVP G-FORCE 40MHz 68EC030+ 4Mb 32-Bit RAM + SCSI Port **£ 589**

CSA MAGNUM 28MHz 68040, 0Mb & SCSI-2 (Optional Serial & Parallel) **£ 849**

GVP G-FORCE 33MHz 68040, + 4Mb + Serial, Parallel SCSI Ports **£ 989**

CSA MAGNUM 33MHz 68040, 0Mb & SCSI-2 (Optional Serial & Parallel) **£ 999**

A4000 ACCELERATORS

AFTERBURNER 50MHz 68030 MMU Optional 68882 and 32-Bit RAM **£ Call**

RCS EXCALIBUR 25MHz 68040 + 32-Bit RAM (For A4000-040 ONLY!) **£ Call**

RCS EXCALIBUR 33MHz 68040 + 32-Bit RAM (For A4000-040!) **£ Call**

GVP G-FORCE 40MHz 68040 + 32-Bit RAM (For A4000-030 & A4000-040 ONLY!) **£ Call**

Some Cards Will Work In The Amiga 3000.
Please Call for latest information and pricing.

AMIGA 1200HD

A1200 + 64 Mb Hard Drive	£ 439
A1200 + 85 Mb Hard Drive	£ 489
A1200 + 127Mb Hard Drive	£ 519
A1200 + 209Mb Hard Drive	£ 589

All A1200's are covered by WANG/ICL On-site Warranty

ALL PRICES INCLUDE VAT

AMIGA 4000

EC-030

A4000-EC030, 2Mb RAM, 130Mb	£ 989
A4000-EC030, 4Mb RAM, 130Mb	£ 1089
A4000-EC030, 6Mb RAM, 214Mb	£ 1189
A4000-EC030, 6Mb RAM, 340Mb*	£ 1289
A4000-EC030, 6Mb RAM, 420Mb*	£ 1389
A4000-EC030, 6Mb RAM, 540Mb	£ 1489

LC-040

A4000-LC040, 6Mb RAM, 214Mb	£ 1639
A4000-LC040, 6Mb RAM, 340Mb*	£ 1739
A4000-LC040, 6Mb RAM, 420Mb*	£ 1839
A4000-LC040, 6Mb RAM, 540Mb	£ 1879

Full - 040

A4000-040, 6Mb RAM, 80Mb	£ 1849
A4000-040, 6Mb RAM, 130Mb	£ 1899

040-Tower

A4000T-040, 6Mb RAM, 214Mb IDE	£ 1989
A4000T-040, 6Mb RAM, 525 SCSHI	£ 2289
A4000T-040, 6Mb RAM, 1Gb SCSHI	£ 2589

* Drive not covered by WANG/ICL On-Site Warranty

NEW MODELS DUE LATE FEB/EARLY MARCH

FREE WITH ALL A4000'S

DELUXE PAINT IV
WORDWORTH V2
PRINT MANAGER

AUDIO PRODUCTS

SUNRIZE AD516/STUDIO 16

8 Track Stereo, 16-Bit, Better than CD Quality - Direct to Disk Recording, Editing & Playback. Can be used in conjunction with Bars & Pipes Professional and the Digital Broadcaster from Digital Micronics via SMPTE.

£ 1249

SUNRIZE AD1012/STUDIO 16

4 Track Mono, 12-Bit, Direct to Disk Recording, Editing & Playback. Can be used in conjunction with Bars & Pipes Professional and the Digital Broadcaster from Digital Micronics, via SMPTE.

£ 499

NOW WITH NEW SOFTWARE

HARD DRIVES

A1200 2.5" INTERNAL IDE

60Mb & Cable	£ 155
80Mb & Cable	£ 185
170Mb & Cable	£ 265
250Mb & Cable	£ 325

BARE SCSI

170Mb SCSI	3.5"	£ 209
240Mb SCSI	3.5"	£ 279
345Mb SCSI	3.5"	£ 375
525Mb SCSI2	3.5"	£ 649
1.0 Gb SCSI2	3.5"	£ 925
1.6 Gb SCSI2	3.5"	£ 1159
1.8 Gb SCSI2	3.5"	£ 1209
2.0 Gb SCSI2	3.5"	£ 1799
3.0 Gb SCSI2	5.25"	£ 2149
4.0 Gb SCSI2	5.25"	£ 2699

Ask about drives suitable for Digital Broadcaster 32

BARE IDE

80 Mb IDE 3.5"	£ 119
120Mb IDE 3.5"	£ 179
210Mb IDE 3.5"	£ 219
250Mb IDE 3.5"	£ 239
340Mb IDE 3.5"	£ 329
420Mb IDE 3.5"	£ 399
545Mb IDE 3.5"	£ 575

HARD DRIVE CONTROLLERS

GVP HC8/A4008 SCSI+ RAM A2000 & 4000 **£ 129**

BSC AT-BUS 2008 IDE+ RAM A2000 & 4000 **£ 89**

FASTLANE Z3

SCSI-2 + Up to 64Mb

NOW £ 325

SEAGATE 2.1Gb BARRACUDA

External SCSI - II Drive

The Fastest By Far

£2,300

Both ideal for use with the Digital Broadcaster 32

REMOVABLE DRIVES

"The Box 150" Bernoulli By IOMEGA

150Mb	SCSI-2 Internal Drive	£459
150Mb	SCSI-2 External Drive	£549
150Mb	Removable Cartridge	£ 89

Drives are supplied with 1 FREE Cartridge

OPTICAL DRIVES

Fujitsu	128Mb SCSI Internal	£699
Panasonic	128Mb SCSI External	£799
128Mb	Optical disk	£ 38

DAT TAPE BACKUP

WANGDAT SCSI DAT - 2Gb (Int)	£ 949
WANGDAT SCSI DAT - 2Gb (Int)	£1089

CD ROM DRIVES

TOSHIBA XM4101B SCSI-2 (Int),Twin Speed, Multi-Session (H/V mount) **£239**

TOSHIBA XM3301B SCSI-2 (Ext),Single Speed, Multi-Session, with cables **£229**

SOFTWARE

REAL 3D V2 New low price	£339
ART DEPT. PRO V2.5	£149
BRILLIANCE	£125
ALADDIN 4D V3	£249
BARS & PIPES PROFESSIONAL	£215
MEDIA POINT	£319
TV-PAINT 2 (Picasso/Retina/Harlequin/EGS)	£195
SCALA MULTIMEDIA 210 (AGA)	£145
OBI 3D Object Convertor	£ 99
MULTIFRAME (For ADPRO)	£ 75
PRO CONTROL (For ADPRO)	£ 65
ASIM CD-ROM FILESYSTEM (V2)	£ 59

Other Professional Software Available On Request

MONITORS

Commodore 1942 (Stereo, Bi-Sync) **£349**

Microvitec Cub-Scan 1440 14" (Full Multi-sync, 0.28 pitch, Digital Memory) **£419**

Microvitec Autoscan 2058 20" (Full Multi-sync, 0.31 pitch, Digital Memory) **£1175**

68881/68882 FPUs

68881	20MHz PGA	£ 49	**68882**	25MHz PGA	£ 79
68882	33MHz PGA	£109	**68882**	50MHz PGA	£ 149

68882 25MHz PLCC - for A4000/030 etc	£ 79
68882 33MHz PLCC - for A4000/030 etc	£ 99
68882 40MHz PLCC - for A4000/030 etc	£ 129

MEMORY SIMMS

32Mb	SIMM32	£1750	**16Mb**	SIMM32	£ 800
8Mb	SIMM32	£350	**4Mb**	SIMM32	£ 160
2Mb	SIMM32	£85	**1Mb**	SIMM32	£ 45
1Mb	SIMM8	£45	**4Mb**	SIMM-8	£ 165
GVP	SIMM32'S 1Mb	£79,	**4MB**		£ 195

VIDEO PRODUCTS

DIGITAL BROADCASTER 32

This Zorro III card performs all of the major functions of a full, **broadcast quality, ON-LINE, NON-LINEAR digital video** edit suite.

It provides REAL-TIME, FULL MOTION, JPEG (50 fields per second) Capture & Compression, direct to hard disk. The video can then be edited and subsequently Decompressed & Played back in REAL-TIME, at 25 fps in broadcast quality, direct to video, laser disk recorder etc.. Also included on the board is full SMPTE timecoding, read & write. The card interfaces with the AD516 Studio 16, 8 track stereo and 4 track mono audio cards from Sunrize Industries to enable full audio (lip sync) to video. It requires an Amiga 3000 or 4000 with 68040 processor, large SCSI-2 hard drive, and fast SCSI-2 hard drive controller.

Typical System:-

Amiga 4000/040 (2+16, 250Mb HD)
Digital Broadcaster 32 (Zorro III Card)
Fastlane Z3 (SCSI-2 Controller Card)
2.1Gb Fast SCSI-2 3.5" HD (For Video)
Sunrize AD516/Studio 16 (Audio Card)
525Mb SCSI-2 HD 3.5" x 1" (For Audio)
Cub-Scan 1440 Monitor (For Amiga)
Commodore 1084S Monitor (For Video)
Image Processing Software (ADPRO)
System Configuration & Testing

AVAILABLE NOW

TOTAL SYSTEM = Approx **£11,000** (inc VAT) FOR FULL, BROADCAST (Betacam SP) QUALITY, ON-LINE, NON-LINEAR, VIDEO EDITING!

FOR FURTHER DETAILS, PLEASE CALL

OPALVISION

MAIN BOARD (V.2)	£ 399
VIDEO PROCESSOR	£ CALL
VIDEO SUITE	£ CALL
TIME BASE CORRECTOR	£ CALL

GVP SPECTRUM EGS

24-Bit Zorro II / Zorro III EGS Standard Retargettable Graphics Card. For Amiga 1500/2000/3000/4000

SPECTRUM With 1Mb VRAM	£ 349
SPECTRUM With 2Mb VRAM	£ 399

HARLEQUIN + *(WITH FREE VLAB Y/C)*

With 4Mb Vram/double buffered	£1549
With 2Mb Vram/single buffered	£1449

VLAB Y/C Real-Time digitiser	£ 359
PERSONAL SFC Single Frame Controller	£ 449
EDITMAN By Syntronix. Edit Controller	£ Call
SYMPATICA Single Frame Controller	£ Call

RETINA Display Card 2Mb	£ 379
RETINA Display Card 4Mb	£ 485

PICASSO II 24-Bit RTG Graphics Card A2/3/4000 up to 1280 x 1024 (2Mb) £ 325

PICASSO II with TVPaint Junior	£ 375
PICASSO II with TVPaint 2.0	£ 489

DON'T FORGET TO CALL THE
BIG BANG BURGER BAR BBS
081 909 2064

SCANNERS

EPSON GT-6500 A4,24-Bit Colour Flatbed Scanner with ASDG software & Cable £ 749

GT-8000 as above £ 999

MISCELLANEOUS

BSC MULTIFACE 3 I/O Card (2 Serial Ports and 1 Parallel Port) £109

Rendale 8802 FMC Composite Genlock £175

GVP G-LOCK (Y/C) £295

SYSTEM BUILDING

WE HAVE THE EXPERTISE TO BUILD A COMPLETE SYSTEM FOR YOUR APPLICATION - CALL TO DISCUSS YOUR REQUIREMENTS.

SPECIALISTS ?

WE KNOW ABOUT THE PRODUCTS THAT WE SELL, AND ARE HAPPY TO ADVISE YOU.

SERVICE

FOR A PERSONAL SERVICE, AND AFTER-SALES BACKUP THAT IS SECOND TO NONE, LOOK NO

DELIVERY CHARGES

Express £ 6
Economy £ 4

For timed deliveries, or heavy orders, please call.

SURCHARGE

If ordering with ACCESS or VISA, there is a 2.5% surcharge. No surcharge for VISA-DELTA, CONNECT or SWITCH.

HOW TO ORDER

Have your debit or credit card details at hand, and call:-

0992 714539

10am-7pm Monday-Friday
Closed Saturday & Sunday.

BY POST:

CALL FIRST TO VERIFY PRICE AND AVAILABILITY BEFORE SENDING YOUR ORDER TO:

"WHITE KNIGHT TECHNOLOGY"

PO BOX 2395,
WALTHAM CROSS,
HERTS EN8 7HQ

probably get a few programs to run. It's really a lot less hassle and expense to buy a PC with a CD-ROM drive though.

7) Who says CD^{32} disks will run on the A1200? Anyway, you could be waiting for years and years before something decent comes out on CD^{32}. Just because the future looks bright, doesn't mean you should put your mirrorshades on. You might get run over by a bus. ***PM***

GONE NATIVE

I am having problems getting the native developer kit from Commodore. I send the right money and two letters later, I had not received the disks, nor a reason why. Should I cancel the cheque? I am also having some problems with SAS 6.3 and compiling the address book.

Mr John O'Meally
Rusholmb
Manchester

Although Commodore have had some problems with excessive demand for the Native Developers Upgrade kit, orders are being dealt with. If you are really worrying about where it has got to, give Commodore a ring on 0628 770088 and find out. By the time you read this, the *Native Developer Upgrade Kit* for Kickstart and Workbench 3.1 should be available, and back orders for these will also be dispatched.

As for the problems that you have with *Address Book*, I had a go at compiling it under the latest SAS C compiler myself, and it did highlight some warnings and problems. Although DICE copes with them, it really shouldn't, but should have reported an error! Anyway, the problems are to do with the prototype and function definitions for **read_record_data** and **write_record_data**. The prototypes should read:

```
BOOL read_record_data(char
*record_data, long record_number);
BOOL write_record_data(char
*record_data, long record_number);
```

I missed the **longs**. These also need to be added in **address_functions.c.** Also, both the above functions were simply doing a **return** when a certain error occurred, and did not show **return FALSE** as they should have done as it's a boolean function. This could have caused problems. These problems are quite easy to fix, and will be incorporated into next months *Address Book*.

Followers of the C programming guide might be interested to know that the executable when compiled under DICE is 12080 bytes. SAS C turns it into 17800 bytes. This was just straight off, without any of the space cutting features of SAS turned on. ***TS***

HEADING FOR TROUBLE

I have a problem with the Commodore include files. I am currently using Sozobon C version 1.01 on my A1200 and cannot compile anything because I keep getting the message...

```
EXEC/TYPES.H  Line 45:  Error
UNDEFINED __STDC__
```

I have followed all of the instructions on the disk, but presumably must have done something wrong.

Ashley Cottle
Plymouth
Devon

If you look at the current **exec/types.h** file, you'll see that it contains a section of code that looks like this...

```
#if __STDC__

typedef signed char BYTE;

#else

typedef char BYTE;

#endif
```

__STDC__ stands for Standard C and this definition is supposed to come from a compiler pre-defined macro whose purpose is to allow a compiler to announce the fact that it is ANSI C compliant. With the introduction of ANSI C the **char** datatype may be explicitly declared to carry, or not carry, a sign. What Commodore have done with the more recent **exec/types.h** files is to allow ANSI C compilers to explicitly recognise that the **BYTE** datatype should be a signed 8-bit quantity.

Now I've not seen nor used the Sozobon C package but presumably the fact that **__STDC__** is not defined by this implementation results in the error you've seen. At the end of the day Sozobon C, like other non-ANSI C compilers, will be perfectly happy with the old **exec/types.h BYTE** type definition, namely...

```
typedef char BYTE;  /* signed 8
bit quantity */
```

So try putting the pre-processor statement...

```
#define __STDC__ 0
```

as the very first line of your source code (before any **#include** statements). An alternative solution might be to remove those offending conditional statements from your exec/types.h file leaving just the above **typedef** definition. ***PAO***

JARGON BUSTING

BBS – Bulletin Board System. The name comes from the American College bulletin board (the cork and drawing pins type) which is a traditional meeting and trading place.

Compiler – A means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. The compiled program is generally much faster than its interpreted counterpart.

C – a compiled language designed primarily for systems programming. It was used to write much of the Amiga's operating system, and is used in the writing of many Amiga applications.

Serial port – an interface port at the back of the Amiga, used mainly for connecting to a modem for communications purposes. Sometimes used for printers.

A SERIAL KILLER

I am a shortwave radio listener and have been for the past fifteen years. I use an Amiga A500 to decode RTTY and ARQ-signals. It is a great hobby, but here in Belgium there isn't much software supporting it. Most listeners use PC machines. After a year or so, I decided to write my own programs and have used ARexx to convert 5-number codes and so on. I would now like to write complete telex-decoding software and I believe I have to manipulate two timers to do this; one set to a certain baud rate and the other for phasing the first bit on the incoming signal. Every time there is an overflow, the data on pin 8 of the serial port must be transferred to a shift register and, at the correct moment, this string must be compared with an alphabet. I realise this is a lot of work for a beginner, so I intend to keep it simple (no icons or gadgets). When I asked an Amiga BBS what language I should use, no one replied. This is not the first time that my questions have been left unanswered. I have since learnt C and now wonder whether *Amiga Shopper* can help me with the timer programming issues, or recommend some useful books. Please excuse my bad English.

Vital Puttenaers
A Rodenbachstraat 4
3200 AARSCHOT
Belgium

Vital, your English is good but, because of the technical nature of your question, it is difficult to tell exactly what help you need. You have said that you use your Amiga to decode *RTTY* signals but, since you do not appear to know how low-level Amiga serial operations work, I've got to assume that you have not written any programs of this nature yourself but that what you want to do is write your own *RTTY* serial collection software.

I know nothing about your world of radio and *RTTY*, but as I understand it *RTTY* demodulators provide incoming data as a slow serial stream (around 50 baud) consisting of five bit code values containing a start bit, five data bits and one and a half stop bits. Presumably there is a parity bit placed between the last data bit and the stop bits (your *RTTY* books will tell you whether or not this is the case).

Unfortunately you have a major problem because the lowest speed the Amiga's serial device can handle is 110 baud and this lower limit is an inherent limitation of the UART chip used for Amiga serial I/O. In short, it is not going to be possible to obtain a 50 baud reception rate even if you try to hit the serial chip hardware directly.

PC users do not have this problem. Most PC serial port baud rate generators can handle low baud rates satisfactorily and I suspect that it has been a PC user who told you that your problems can be solved by using a low-level 'hit the hardware' coding approach. On suitable machines it can and, in such cases, this would involve the use of two timers. One timer would determine the baud rate, the other would midpoint-align the incoming serial signal (because, when a start bit is detected, you need to wait for a period equal to half a bit width in order to centre the remaining bits of the signal).

This *RTTY* reception/transmission format difficulty must be fairly common (there are many computers with serial ports that cannot handle the *RTTY* signals directly). I'm pretty certain that if you contact some amateur radio equipment suppliers, you will find that *RTTY<->RS232*

serial converter units are available that will allow you to feed your Amiga with *RTTY* data using a conventional *RS232* signal which is readable using the Amiga's serial facilities.

If this pathway is feasible and you then want to learn about Amiga serial I/O (at 110 baud or above), the general technical details can be found in the *Amiga ROM Kernel Devices* reference manual. High-level C programs to read this type of signal data would just involve opening the serial device and asking it to send you the serial data bytes as they arrive. This is relatively easy and you'll find examples in the RKM manual. If you want to try the low-level approach, then the *Amiga Hardware Reference* manual will also be needed. There are even official ways of gaining low-level access to the serial port using the Amiga's misc.resource facilities. Be warned, however, – programming at this level is going to be complex and you really need to be very familiar with serial I/O at the higher 'Amiga serial device' level, and also with the general characteristics of the Amiga's operating system, before attempting it.

You've mentioned that you don't get much help from the Amiga BBS boards. This is probably because you are dealing with such a specialised area that I doubt whether there are many Amiga users around who *could* help. I did incidentally contact the *Radio Society of Great Britain* (tel 0707-659015) and apparently there is an affiliated society called *BARTDG* (call sign G6LZB) who have a lot of comms and radio transmission expertise. If you write to: BARDTG, Peter Adams, 464 Whippendell Road, Watford, Herts WD1 1PT, he may even be able to put you in touch with some other Amiga owning *RTTY* enthusiasts. ***PAO***

JARGON BUSTING

Partition – part of a hard drive separated off from the rest. As far as Workbench, AmigaDOS and the rest of the world is concerned, a partition is a disk in its own right. Problems do come to the fore when you try to copy data between two partitions on the same drive.

COBOL – Common Business Orientated Language, used extensively on large computers in the commercial sector. It is also used, though to a lesser extent, on the IBM PC and compatibles.

Emulator – a device, either hardware or software, that enables programs written for another machine to be used on the Amiga. The emulator makes the Amiga take on all (or most) of the characteristics of the foreign machine, and is transparent to the programs running under it.

ROM sharer – A device which will hold more than one ROM (the chip in which Kickstart is stored) and enable the user to choose which version to use.

Kickstart – The most basic and central part of the Amiga's operating system. These days it is held in ROM,

STORAGE SPACE

GENERAL

I have owned an Amiga A500 for a number of years now. During that time I have collected a very large number of cover disks that are now taking up much more room than I can spare. Some of the disks contain programs and utilities that I would like to keep. Can you advise how this can be done and what software I will need?

Nigel Stock
Hayes
Middlesex

This problem is a lot more common than you might imagine. The solution is to copy the software you want on to a collection of disks (preferably a hard disk) and re-format the existing disks. However, with the basic A500 this entails using AmigaDOS since Workbench will probably be of little or no use. I would suggest you use an AmigaDOS utility such as SID or DiskMaster to avoid using the Shell; and each time you copy a utility to a new disk, make sure it works. This problem is rather too generic to be more help than that I'm afraid. MS

GOING WITH THE FLOW

SOFTWARE

I am having trouble in finding a flowcharting package for my A600 and would be grateful if you could advise me of any that you are aware of. I am a mainframe analyst programmer, used to using proper structured methods for designing programs, and find the lack of a decent flowcharter for the Amiga to be a major annoyance. I would also be grateful for details of any COBOL compiler available for the Amiga. Your mag is clearly the best available for the Amiga - I don't even bother looking at the others any more.

S. Pentland
Bradley Stoke North
Bristol

I've not heard of any dedicated professional quality flowcharters for the Amiga, but there is an outside possibility that a developer in the United States has produced one, so perhaps a few faxes directly to U.S. software suppliers might turn up trumps. Another possibility that has been suggested is a program called *AGraph* which could apparently be used to generate flowcharts. I've been able to determine that it exists in both commercial and PD/shareware forms, but unfortunately have not been able to track down a supplier. Nor have I any idea how useful this offering will be. Some PC software can be run on the Amiga by using a PC emulator, but I doubt whether this approach on an A600 machine is going to be feasible.

As far as I know there are no Amiga COBOL packages, but I did hear of someone running a public domain PC COBOL on the Amiga via the *PCTask* emulator. It was *very* slow. ***PAO***

DISABLING THE INTERNAL FLOPPY DRIVE

HARDWARE

I wish to make one of my external drives DF0: using a dual external drive. Is it possible to disable the internal drive permanently and, if so, how?

B Cook
Gosport
Hants

Anything is possible, but I would strongly advise against it. The primary consideration here is the difference in hardware between the internal and external drives. The external units have some extra hardware (a flip-flop) to control the motor, whereas for DF0: this hardware is part of the Gary chip. Permanently disabling the drive could cause you no end of trouble (a large hammer ought to do the trick). A better solution is to use a software patch to make one of the external drives look like DF0:. Chris Hames' *Degrader* (available from good PD libraries) can do this for you. ***MS***

ADD SPEED

HARDWARE

Having just got *Imagine 2* off your sister magazine, *Amiga Format*, I feel that an accelerator is called for. However, money is tight and I am limited to about £150. I was thinking of getting the new Supra Turbo 28, as this has a thru'-port for my hard disk. I am also considering the ICD AdSpeed as it is internal and could save desk space. Which would you advise?

I Lloyd,
Carterton
Oxon.

Well, adding anything that just gives you a faster 68000 chip is not going to make much difference to be honest. Your best bet is to look at some of the cheaper internal 68020 accelerators, which will offer a decent performance boost. Ideally you would be able to stretch to the lower end 68030 accelerators and, although prices are dropping, they might be a little expensive. Looking at your system specification, you might like to seriously consider trading in your A500 and go for an A1200 with a 60MB IDE drive. You would not be far off, and this would give you a much better product to build from in the future, and it does come with a 14Mhz 68020 chip.***TS***

BOOT PARTITIONING

GENERAL

I have an A500 with a ROM sharer swapping between Kickstart 1.3 and 2.04. The machine starts with the 1.3 ROM and alternates to 2.04 when I hold down both Amiga keys and the control key. I partitioned my hard drive into two sections, planning to have Workbench 1.3 in one partition and Workbench 2.04 in the other. Using the supplied GVP utility, I configured the hard drive to boot from partition DH0:.

The boot partition works well having loaded it from the existing backup set, but the Workbench 2.04 partition starts using the V1.3 colours. I can always boot from the 2.04 disk set, but this is slow – although I need it to work with some exclusive Workbench 2.04 software.

I think that I need to modify the Startup-sequence on the boot partition to test which Kickstart is in use. If it's Kickstart 1.3, then I need to execute DH0:S/Startup1 (which is the main part of the Workbench 1.3 startup). Otherwise I need to execute DH1:S/Startup2, which is the main section of the Workbench 2.04 Startup-sequence.

Before I go completely mad, please explain to me how this can be possible.

John Nell
Rudgwick
West Sussex

This is a tough nut to crack on its own, but there's a little utility called *ATOO* on the coverdisk this month that caters for just such a problem. It

does not cater for the 1.3 screen colours. The 1.3 Kickstart reads the user preferences for things such as Workbench screen mode and colours from the **DEVS:** system - configuration file as the machine boots up. Workbench 2 on the other hand, employs a little "demon" called *IPREFS*.

This is the little beastie responsible for those annoying requesters about Intuition attempting to reset the screen during startup. (Although to be fair, this only happens when something has molested the early part of the startup-sequence and attempted to echo some text to the console.)

Your problem should be simple for *ATOO* to deal with. It works in the following fashion: When the machine is started, *ATOO* senses which Kickstart version is in use and returns one of the following conditions:

OK: If the machine is running Kickstart 2.04 or higher.
WARN: If the machine is running 1.3 or earlier.

These conditions can usually be tested with the AmigaDOS **IF...ELSE...ENDIF** construct, but *ATOO* goes a couple of stages further and removes the need to do this. If the machine has been started with a 2.04 ROM, it can be configured to re-assign the main AmigaDOS boot directories, create and assign the RAM directories and add disk buffers to DF0:-DF3:. In other words, it automatically performs some of the main startup tasks for you, without asking. It is important to note however, *ATOO* expects to call the default AmigaDOS startup routine, **S:Startup-sequence**, so you will have to rename your existing one from DH1:S/Startup1 to DH1:S/Startup-sequence.

ATOO should be placed in the C directory of your primary boot partition (DH0:C) and should be the first line of the main (Workbench 1.3) **S:Startup-sequence**, like this:

```
C:ATOO SYS=dh1: C=dh1:C S=dh1:S
DEVS=dh1:Devs LIBS=dh1:Libs
L=dh1:L FONTS=dh1:Fonts
ENVARC=dh1:Prefs/Env-Archive DORAM
EXECUTE
```

The remainder of the 1.3 startup should remain untouched and the first few lines of your 2.04 Startup-sequence can read something like this:

```
//listing//
C:SetPatch QUIET
C:Version >NIL:
C:Copy >NIL: ENVARC: RAM:ENV ALL
NOREQ
Resident >NIL: C:Execute PURE
resident >NIL: C:Assign PURE
BindDrivers
```

ATOO is documented in more detail in the AmigaDOS feature this month. Happy startups. ***MS***

QUICK START

GENERAL

I recently had my A600 repaired by Commodore due to a fault on the power-in connection. The machine now works fine, but since its service it now cold/warm starts in a matter of seconds. Previously, it would take some time before accessing the disk or bringing up the boot requester. The latter is true with all other systems I have seen. Is this a fault and should it be attended to?

David Asca
Peacehaven
East Sussex

The slow boot time should only be noticeable on the A1200 machines fitted with a version 3 ROM, and that's because they are looking for a non-existent hard disk drive. The A600 cold boot is very fast. I would say therefore, unless your machine had been originally fitted with a V3 ROM (which I doubt), then you have nothing to worry about. ***MS***

WHERE'S ME FONTS GONE?

PRINTERS

I cannot get the internal printer fonts of my Canon BJ-10ex, other than the default font, to work with Wordworth 2. Even when I select the Show gadget after font selection, absolutely nothing happens. Also, I have the printer prefs set to EpsonQ, but when I re-boot it sometimes defaults to EpsonX.

Bob Preston
Morton
Lincolnshire

The Canon BJ-10ex is two printers in one. It can either be (or 'emulate' to be more precise) an Epson printer, or it can be a Canon printer. Most of the fonts in your BJ-10ex are available only when it is pretending to be an Epson printer. To use them in Wordworth you must first ensure that the printer dip switches are set correctly for Epson emulation, and then use the *Wordworth* installation program to install the printer driver (EpsonQ) and printer fonts for the BJ-10ex under Epson LQ emulation.

In the **Wordworth Print Setup** requester you must select the print method as **Internal Printer Font** (NLQ) for the printer fonts, *Courier, Outline, SansSerif* and *Script* to be made available, plus proportional (Prop) versions in the **Typeface** requester. Keep in mind that these fonts are not WYSIWYG. What you see on the screen will always be the standard Pica60 font that *Wordworth* uses, but the actual selected printer font will be printed.

The problem with your printer preferences defaulting to EpsonX would seem to be a bug in *Wordworth 2* that has been fixed in *Wordworth 2-AGA*. This very problem used to happen to me when I was testing bits and bobs with *Wordworth 2*. I'd set the printer driver in *Wordworth's* requester, do a test printout and then, after quitting, discover to my horror that *Wordworth* had altered my Workbench Printer preferences to use the driver I last used in *Wordworth*. This annoying beastie doesn't happen with *Wordworth 2-AGA*. ***JW***

JARGON BUSTING

Font – the group of letters, numbers and special characters that comprise one variation of typeface, eg: 12pt Times, 12pt Times Bold, 12pt Times Italic. Sometimes (mistakenly) used in desktop publishing to refer to a type family.

ILBM – Interleaved Bit Map is the IFF sub-format in which graphics images are stored.

PostScript – a powerful mathematical langauge used to describe graphics and text images to compatible printers. Because it does not rely on a pixel system, objects so described can be scaled and rotated without distortion or loss of detail. PostScript fonts are defined in the same manner and can be resized for headings etc.

Overscan – A way of achieving a resolution higher than the Amiga's standard by utilising the border areas of the screen which are normally left blank. Useful for video work.

Sans Serif – Typefaces without serifs, eg: Helvetica, AvantGarde. Sometimes referred to as Grotesque.

Typeface – All sizes of a particular type family and style, for example, Times Italic, Helvetica Italic, Courier Bold.

PICTURE DISPLAY

GENERAL

1. Can *Multiview* or *WBPattern* display IFF pictures? When I try to load any pictures (for example *Nexus Background* from Issue 33) the programs respond with "Unknown DataType". The ILBM datatype is in the Devs/Drawer – what is going wrong?
2. Does Workbench 3 come with any outline fonts? My Fonts disk only contains bitmapped fonts, even though CGTimes and CGTriumvirate are mentioned in the user guide.

Steve Clogg
Addlestone
Surrey

1. Both *Multiview* and *WBPattern* can display IFF pictures — even overscanned ones like the Nexus Background, *RoofSlate* from issue 33. The problem with that one was with the installation: something in the install script accidentally kills a Workbench 3 assignment, and in doing so stops *Multiview* working! The answer is to de-archive the Nexus background from the disk, copy the final file to your hard drive, re-boot and try viewing it again!

By default, *Multiview* opens on the current screen, which is usually just a simple four-colour Workbench display. For a better effect, get the *Multiview's* Information screen and remove the brackets from the **SCREEN** ToolType. Now double-click *Multiview* and select the file you want to view. Hey presto, full colour!

The *WBPattern* **Preferences** tool is something of a mystery. When I tested it, it worked provided you selected a picture for both Workbench and Screen, but maybe it was me being impatient. In any event, the picture's palette is not used so it is doubtful how useful a picture such as *Roofslate* would be. The answer to this one is experiment with it yourself to get the best results.

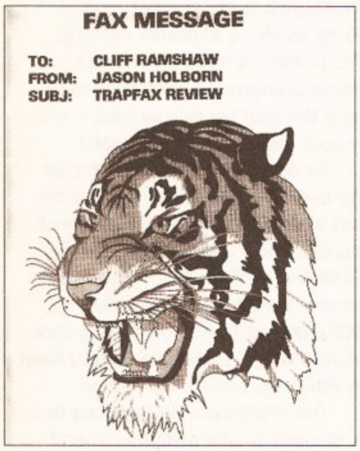
2. It's one of those things that manuals get written before the software is finished and someone decided the outline fonts would not be included in that release. To be frank though, you aren't missing much: *CGTimes* is a reasonable rendition of the classic serif font, *CGTriumvirate* is an ugly sans-serif, the classic *Helvetica* is much better. Several public domain libraries now stock a large range of CG Fonts that you can try. The forthcoming *Wordworth 3* (three copies are to be won this month if you turn to page 114) will support the Mac and PC formats TrueType and Postscript, which are nicer looking, faster and better supported too. ***MS***

FAX OF LIFE

Jason Holborn boots up with 'TrapFax', a program that enables your modem to send and receive faxes.

FAX machines are wonderful things. Within a matter of seconds you can send an exact duplicate of a document anywhere around the world without having to resort to the snail-like postal service. Although it is unlikely that you'll ever find a FAX machine in every home, buying a FAX still makes a lot of sense.

You don't *have* to spend hundreds of pounds to get a FAX. If you're lucky enough to own a modem equipped with FAX capabilities, you could send and receive FAX messages directly to and from your Amiga. Modem manufacturers rarely bundle FAX software with their modems, so this is where *TrapFAX* comes in.



FAXes sent with TrapFax are of an exceptionally high quality.

TrapFAX is a program that, when used in conjunction with a suitable modem, will allow you to send and receive FAX messages on your Amiga. It's important to check to make sure that the FAX modem that you own will work with *TrapFAX* before you hand over your hard-earned cash. FAX modems come in two flavours: Class 1 and Class 2. Class 2 (which is the standard that *TrapFAX* supports) is the more recent standard, but modem manufacturers have been slow to catch on. Although Supra's excellent range of FAX modems fully support both Class 1 and Class 2 standards, other makes may not (the US Robotics' *Sportster*, for example, has only recently been upgraded).

REROUTE 66

TrapFAX works in a very similar manner to that other great Amiga FAX program, *GPFax*. Once you've installed the program, all that you have to do to get *TrapFAX* up and running is to click on the **TFaxPrinter** icon and the core of *TrapFAX* will be loaded into memory. From then on all printer operations are automatically re-routed to *TrapFAX*. What this essentially means, is that you're not restricted to a particular program when preparing your FAX messages. As long as the package you choose makes use of the Amiga printer device, *TrapFAX* will be able to handle it. *TrapFAX* isn't restricted to programs that do a graphic dump either. If you use a word processing program that sends text to your printer, *TrapFAX* will automatically generate an 'image' of your text.

Unlike *GPFax*, *TrapFAX* doesn't insist that you install a custom printer driver, so just about any program that runs under Intuition can produce results suitable for FAX transmission. Pages produced by a desktop publishing or 'word' publishing program look best because the text is printed at the maximum resolution of a standard FAX machine. The quality of FAXes is certainly a lot better than similar results produced by *GPFax* and miles better than the results you'd expect from a conventional FAX machine (cutting out the FAX machine's scanner improves quality no end!).

HANGIN' ON THE TELEPHONE

Once you've produced your FAX message using something like *Final Writer*, *TrapFAX* re-routes the output into a file which can then either be sent directly down the phone line, or rescheduled for a later date. *TrapFAX* includes all the usual scheduling tools that you'd expect from a decent FAX program. Entire 'phonebooks' of recipients can be built up and you can then send a single FAX to one or a whole group of recipients at pre-allocated times. Even if *TrapFAX* fails to send a FAX on its first attempt, it will keep trying until it gets through.

TrapFAX can also be set up to automatically receive FAXes, using a separate utility called **TFaxAnswer**. Once **TFaxAnswer** has been run, it sits in the background and waits for another FAX machine to dial up your Amiga. If a call is received, **TFaxAnswer** automatically picks up the phone and receives the FAX which is then saved to disk as a FAX file. Although this FAX file cannot be loaded into a program like *DPaint*, *TrapFAX's* developers include a utility for viewing FAXes on the Workbench and, for Workbench 3.0-based machines, a special 'datatype' that allows you to use a program like *MultiView* to display the FAX messages.

CONCLUSION

TrapFAX certainly isn't the cheapest FAX program for the Amiga, but it certainly is the most well equipped. The lack of Class 1 FAX support is rather disturbing (how many users have Class 2-compatible FAX modems?), but for those of you lucky enough to own such a compatible modem, *TrapFAX* is the program to go for.

The only minor gripe I could possibly level at *TrapFAX* is its rather unreliable operation when used with a Supra FAX modem. Although some FAX machines readily accepted *TrapFAX's* transmissions, others refused to even talk to my Supra V32BIS. Supra modems are well known for their unstable nature, so you'd be wise to make sure that yours has the latest release of the Rockwell chip set before putting too much trust in *TrapFAX*.

Gripes aside, *TrapFAX* is an excellent program. *TrapFAX's* developers, Village Tronic, have produced a program that is not only easy to use, but totally packed to the gills with every feature you could ever wish for, all of which work nicely around the Amiga's multitasking operating system. *TrapFax* may not be the most exciting of applications, but if you're running a small business and need FAX facilities, it's worth serious consideration. AS

BEGINNERS BEGINNERS START HERE BEGINNERS

What is a FAX machine? I'm sure every Amiga user has at least heard of the Facsimile (FAX for short) machine, even if they don't own one. Although FAX machines are primarily still restricted to business users, more and more of them are creeping into the home. The basic idea behind the FAX machine is that it provides a quick and easy method of sending an almost exact copy of a document between two places over a standard telephone line.

FAX machines are best thought of as a combination of a printer, a scanner and a modem all rolled into one. When you send a document, your FAX machine scans the document and converts it into digital data that it then sends down the phone line (in an analog form) to the FAX machine on the other end of the line. That FAX machine then converts the analog data back into digital data which it then prints on to special thermal paper. The end result is an almost exact copy of the document that you fed into your FAX machine being printed by the FAX machine at the receiving end.

Using FAX software on your Amiga provides a far more efficient method of sending facsimile messages. Because the entire process of preparing a document is handled within the memory of your Amiga, computer-based FAX machines don't need to scan the document into memory and so the quality of the FAX 'image' is of a much better quality. The other major advantage of using an Amiga-based FAX system is that you can use just about any Amiga word processor, desktop publishing program or even a paint program to prepare your documents, without the need to print them out on to paper first. The end result is a much better presented FAX.

SHOPPING LIST

TrapFAX ....
£74.95
From: BlitterSoft, 40 Colley Hill, Bradwell, Milton Keynes, Bucks MK13 9DB
0908 220196

CHECKOUT
PRODUCT NAME

Features
●●●●●●●●●○
With more bells and whistles than your average fairground organ, it's just a shame the program doesn't support Class 1 faxes.

Documentation
●●●●●●●●○○
Every feature is explained in clear and easy to follow English.

Ease of Use
●●●●●●●●○○
So very simple to use that you don't even need to read the manual.

Value for Money
●●●●●●○○○○
Rather expensive when compared to *GPFax* but worth every single penny nevertheless

Overall rating
●●●●●●●●○○
A brilliantly designed and hard working piece of software that runs rings around the competition.

Character Building

Good outline fonts are the life-blood of DTP. Jeff Walker looks at the version two of TypeSmith, which lets you make your own.

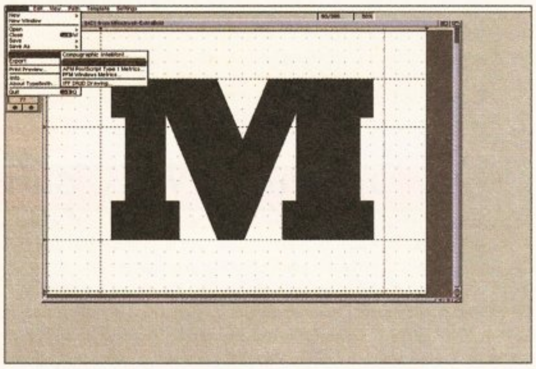
When you consider how important outline fonts are to us, it's amazing that *TypeSmith* is still the only outline font editor for the Amiga. Starting out life in Germany a couple of years ago, under the name *Font Designer*, *TypeSmith* was licensed last year by Soft-Logik. They redesigned the user interface so that it was in keeping with other Soft-Logik products and the Amiga Style Guide. A superb job they made of it too (see our review of version 1 in issue 26).

When you are producing something that people are buying, but for which there is either weak or no competition, the temptation to do nothing must be overwhelming. I can think of several Amiga applications that stagnated in this way and only the introduction of the AGA chip set got them moving again.

This is not Soft-Logik's style and it never has been. There were, however, a few features *TypeSmith* lacked that would be of great benefit to Amiga desktop publishers. Despite a definite lack of rivals to spur development, Soft-Logik have done the work anyway, culminating in the release of *TypeSmith 2*.

TypeSmith's most creative use is for designing original fonts. Easy to say, much more difficult to do, even with a powerful aid like *TypeSmith*. The tools of the trade are surprisingly few. One to draw ellipses, one to draw circles and one to draw straight lines and curves. These three fundamental tools are supplemented with others to add points to a segment, join the end points of two segments, turn a curve into a straight line and a straight line into a curve. These are all the tools you need to create any shape you like.

Drawing with *TypeSmith* is not like drawing with a normal painting program. The drawing aids create structured graphics, and structured drawing is a precise process, no question about it. Attention to small detail is paramount. Nobody will want a wobbly or inconsistent font, so the font creation process is slow and deliberate. Buying a font editor will not turn you into a font designer overnight. If, however, you are already a font designer, or experienced with structured drawing tools, character creation in *TypeSmith* won't prove problematic.



A useful feature of TypeSmith 2 is its ability to import both Mac and MS-DOS versions of the PostScript Type 1 font format, along with Compugraphic Intellifont and Soft-Logik's own outline font format.

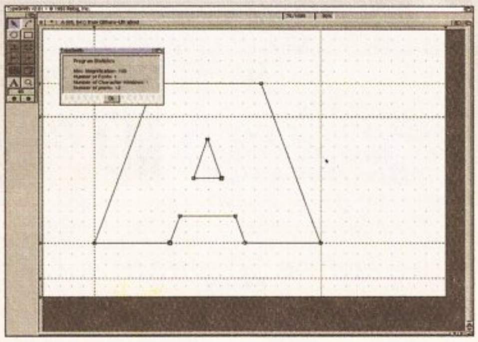
Learning to operate a new set of tools is something even experienced users dislike. *TypeSmith's* are not difficult to master, but if you've been used to drawing with another application you might want to continue working in that way. For this reason, Soft-Logik has included the option to import IFF-DR2D drawings, enabling you to create your characters in a DR2D compatible drawing program rather than in *TypeSmith*. This boils down to either *ProVector*, or Soft-Logik's own *Art*

WHATS THE POINT?

Outline is the technical term given to a class of font that is held in memory as a number of points in space and the mathematical functions that describe how those points are joined together. It is really very much like those dot-to-dot drawings you did when you were a kid. Together, the points and functions describe the outline of a character, hence the technical term. Because the outlines completely enclose the shape, the computer can fill the shapes to make them solid.

The mathematical functions are known as vectors and vector font is another way of saying outline font. This type of computer data is also known as a structured drawing and structured font is another term that means the same as outline font.

So, outline font, vector font and structured font all mean exactly the same thing.



Character outlines are best described by as few points and segments (lines between the points) as possible. This letter A has just 12 points.

There are various makes of outline font. The best known to Amiga users is Agfa Compugraphic Intellifont, Agfa being the name of the company that makes them, Compugraphic Intellifont being the brand name or 'format' of the outline font. Desktop publishers often use PostScript Type 1 fonts, which is another outline font format and very different from Compugraphic Intellifont. The only other important outline font format on the Amiga is NimbusQ, which is used by *Final Copy* and *Final Writer* along with Type 1 and Compugraphic.

Because the characters in outline fonts are described by points and vectors, they can be stretched, shrunk and manipulated to almost any shape or size without effecting output quality. The curve or line from one point to another will always be smooth, no matter what you do to a character. The advantage is obvious. The disadvantage is that computer displays and printers are both dot-matrix devices. It means that the outline characters have to be turned into matrices of dots (the technical term is bitmaps), before they can be displayed or printed. To start with, the vectors take time to compute. Then, the bitmaps take time to compute, so rendering to both screen and printer can take a long time. The faster the CPU in your computer, the faster everything can be computed, the quicker a character gets displayed or printed.

Most software that uses outline fonts will cache the bitmaps in memory as it creates them, thus enabling it to display or print a character very quickly after it has been used once. Each character you use, in each size, in each font, requires a new bitmap. That's why documents in desktop publishers and word processors can gobble up really enormous lumps of memory. If you run out of memory, some software will happily continue creating the bitmaps on the fly. In other words, they will not cache them, which will cause the software to operate much more slowly. Other software will refuse to continue or display classic memory-shortage symptoms, like corrupted displays, unpredictable printouts or even computer crashes.

Another characteristic of outline fonts is that the vectors and bitmaps have to be computed once. First for the comparatively low resolution screen display and, then again, at much higher resolution for the printer. Bitmaps for the screen will be computed at about 75 dots per inch (dpi), while bitmaps for the printer will be computed at 300 dpi, 360 dpi, or at whatever is the highest resolution of your printer. Naturally, the printer bitmaps consume much more memory and take longer to compute than the lower resolution screen bitmaps. This is why everything sometimes works quite quickly and entirely correctly while you are creating a document, but the printed output takes ages to appear and completely or partly fails.

You can never have enough memory when working with outline fonts and only a faster CPU will make anything happen significantly quicker.

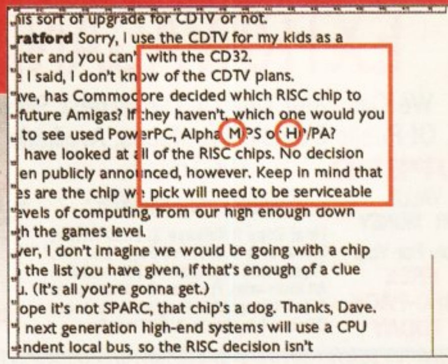
GIVE US A HINT

One of the most significant improvements in version 2 of *TypeSmith* is the ability to save hinted fonts. A hint is a special instruction that adjusts how a character is displayed.

At large sizes hints are not important, but at small sizes, especially at low resolutions, the points around an outline character don't always coincide with the dots that can be displayed. Typically this results in strokes of uneven width. One upright of an H might be thicker than the other, for example. It can also result in strokes, or even whole characters, not getting displayed. Hints identify the potential problem areas of a character and distort the outline slightly, so that the points on the outline coincide with the displayed dots.

As outline characters are totally recalculated for the printer (see the 'What's The Point?' panel), poorly formed characters on the screen do not necessarily mean poorly formed characters in the printout. Hints for printers come into their own when printing very small characters.

The character level and font level hinting features of *TypeSmith* are very sophisticated, including features to automatically deal with problems like overlapping stems and shallow curves. Hints can be generated for Compugraphic Intellifont and PostScript Type 1 fonts.



The letters M and H have been rendered poorly. The left and right uprights are different widths, as you can see. Hints will attempt to distort the outlines so that the strokes render evenly.

Expression. Gold Disk's *ProDraw* cannot export in DR2D format.

Another aid to the character creation process is auto-tracing. This is a feature that reads in a standard bitmapped character and automatically traces around the edges, thus producing an outline of the character. The original *TypeSmith* had an external auto-trace feature that meant messing with importing and exporting. This has now been incorporated into *TypeSmith* itself. Single characters that have either been scanned or drawn, as well as entire Amiga bitmap fonts can be imported for auto-tracing.

Auto-tracing is just an *aid* to character creation. Auto-traced characters will contain more points than necessary and the outlines will always be wobbly. *TypeSmith* has given you something to start from. Your job as a font designer is to turn the wobbly, auto-traced outline into a clean and concise one. Many people expect auto-tracing to do the whole job for them and they are always very disappointed when it doesn't.

An alternative to auto-tracing is doing it manually. Imported bitmaps can be displayed as ghosted templates, over which you can draw the outlines yourself. Once you have become experienced with the drawing tools, this is often a faster way to work than adjusting auto-traced outlines.

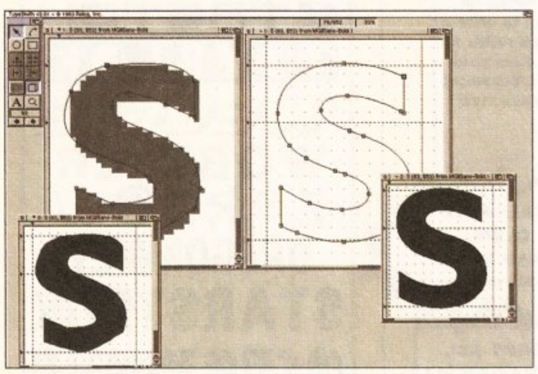
Because of the nature of bitmapped graphics, small bitmap fonts or characters are going to be displayed very blocky in *TypeSmith* and are not ideal for auto or manual tracing. Something like 100-150pt is better, a bitmap that would be about 1.5 to 2 inches tall when viewed on a standard 640 by 512 screen.

CLEAN AND CONVERT

TypeSmith isn't only about designing outline fonts, but also for cleaning up and converting existing outline fonts.

Most PD or shareware outline fonts are far from perfect. Missing characters, garbled characters, poor width settings, no kerning, no hinting... and so on. Even expensive commercial outline fonts have the odd problem that needs fixing. Cleaning up fonts with *TypeSmith* is very easy. Again, because there will be 200-plus characters in the font, adjusting widths and kerning can be a painstaking process. There are aids at hand. The feature that automatically guesses the width of each character and the ability to import the kerning settings from another font, for example. It will be up to you to tweak these settings into proper shape though.

TypeSmith can have up to five fonts open at once. The more memory available, the more fonts can be loaded and characters can be cut and pasted between them. This will enable you to quickly fill a missing character in one font with a character from a similar font.



Auto-tracing a bitmap font gives you a head start on a design. Your job is to adjust the points and segments of the character on the left and turn it into something like the perfectly formed outline on the right.

Conversion facilities are entirely adequate for Amiga needs. *TypeSmith* will import *Compugraphic*, *PostScript Type 1* (MS-DOS and Mac format), and Soft-Logik's own outline font format. Type 1 (AFM) and Soft-Logik (FM) metrics files can be imported, as well as the Windows (PFM) metrics files you can get these days with Type 1 fonts.

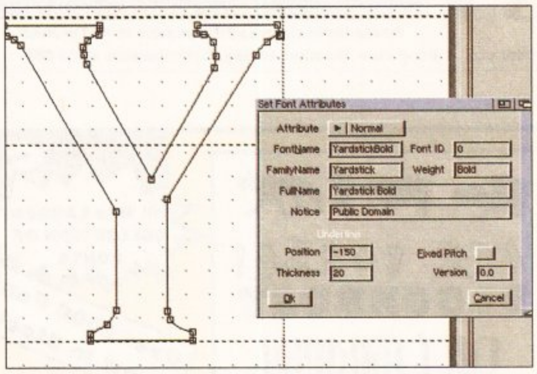
Fonts can be exported in Soft-Logik format, PostScript Type 1 (MS-DOS format), PostScript Type 3, and two flavours of Compugraphic, the standard format used by most Amiga applications, plus the special format used by Gold Disk software. Metrics files can be exported in PostScript Type 1 (AFM) or Soft-Logik (FM) format.

The kerning information for Compugraphic fonts is held in the single font file, along with all other data like spacing and compositions. *TypeSmith's* internal kerning format is incompatible with Compugraphic, so when exporting a font as Compugraphic, all kerning information is sadly lost. This applies even when exporting for use with Gold Disk programs, which causes an extra 'metrics' file to be written. Users of Gold Disk's *ProPage* should export as Type 1 and use Gold Disk's *Font Manager* program to convert to Compugraphic. This utility interprets and converts the Type 1 kerning information and writes it to the font's 'metric' file that *ProPage* will use when you select its kerning option.

All current Amiga software that uses outline fonts will support either or all of the Compugraphic, PostScript Type 1 or Soft-Logik font formats. Even programs like *Final Copy* and *Final Writer*, whose main font format is something called *NimbusQ*, will accept Type 1 and Compugraphic. On other makes of computers there are many other font formats, TrueType probably being the most popular. *TypeSmith* cannot absolutely convert any type of outline font to any other type of font format (and I don't know a single program that can).It is almost certain, though, that the particular design of font you desire will be available in either Mac or MS-DOS format *PostScript Type 1*.

BITMAPS

One of the major additions to *TypeSmith 2* is a bitmap font editor. This may seem a strange thing to have in an outline font editor, but there is good reason.



Font attributes need to be set correctly, or programs may get confused. ID numbers are not generally used by Amiga software, but FontName, FamilyName and Weight are very important to PageStream.

High quality outline fonts take time to calculate and therefore time to display, but they print perfectly. Low quality bitmap fonts take literally no time to calculate. They can therefore be displayed very quickly, but print poorly. What if we work with a bitmap font on the screen? We can then crack on with designing the document instead of waiting all day for fonts to render, and the software uses the outline equivalent when it comes to print time? Enter the *TypeSmith* bitmap font editor.

This feature is aimed primarily at *PageStream* users. Bitmap font equivalents of the whole font or the current character can, in *TypeSmith*, be automatically created from the outlines in memory and saved in *PostScript ABF* format, or as a Soft-

CRACKING THE CODE

A standard font generally consists of a maximum of 256 characters. If you think of an empty font as 256 blank spaces, then each of the characters that comprise a font can be slotted into any of those positions. The instruction that knows which characters are positioned where, is called the encoding scheme.

The standard alphanumerical and punctuation characters are almost always in standard positions. Many non-standard characters, like accented foreign letters for example, are actually compositions of two characters. The e-acute character, for instance, might be displayed by merging the normal letter e and the acute character together, not from a single e-acute character. This would enable any other acute-accented character to be displayed using the same acute character and the normal letter, thus saving space in the font. The encoding scheme is the part of the font that *remembers* where everything is, so that the letter you type is the letter you get.

Non-standard characters are often positioned in the font differently. No matter what a character's position in a font is, everything is hunky-dory as long as the encoding scheme knows where in the font to look for that character. The letter A, for example, which is normally in position 65, could just as easily be in position 99, as long as the encoding scheme knew that when you typed a letter A (which is still 65 to the Amiga), it should display character 99 in the font. The letter A is what gets displayed, not the character in position 65.

The Amiga uses the ISO/ECMA Latin 1 character set, which does not define characters for all 256 positions. Some positions are used for invisible formatting codes that are not used in outline fonts.

The Adobe Standard Encoding, used for PostScript Type 1 fonts, is almost exactly the same as the Amiga's ISO Latin character set. The difference is that it has blanks in the positions where the formatting codes would be and it also contains additional characters. *TypeSmith* fully understands and exports this encoding scheme, including its own *TypeSmith* encoding scheme, and the Agfa Compugraphic encoding scheme. *TypeSmith* will even import custom Type 1 character sets (which, of course, it cannot know about), by putting the characters in that font in the positions suggested by the font's encoding instructions.

Yup, you're right, it's extremely confusing and that's because there is no single standard for character sets. The upshot is that even if a font contains a fully featured character set, the program that is using the font may not be able to display all those characters if it is using a different encoding scheme to work out character positions. For instance, *PageStream 2* often cannot quite *see* all the characters in a Type 1 font. Yet, if you import that font into *TypeSmith* and export it as a Soft-Logik outline font or a Compugraphic Intellifont, the characters that could not be used with the Type 1 will all of a sudden become available to you. The explanation for this is that *PageStream* and the font are now using the same encoding scheme.

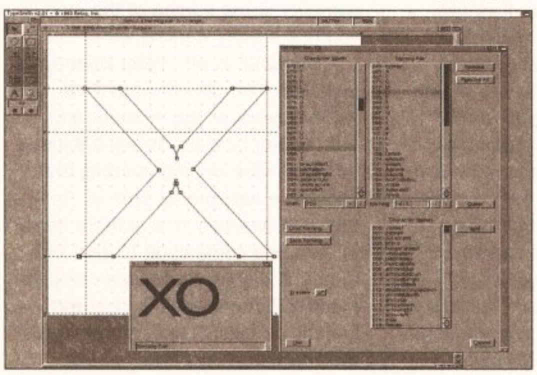
Logik bitmap font. *PageStream* will automatically use these bitmaps for screen rendering rather than the Type 1 of Soft-Logik outline font. It makes a great difference. A screen that takes a minute to render normally, is instead rendered in less than half that time, just a few seconds on a very fast Amiga. There's no Compugraphic equivalent of this feature. If you have a Compugraphic font that you want to render more quickly in *PageStream*, you simply run it through *TypeSmith*, save and use the Type 1 or Soft-Logik equivalent.

There are four pre-set bitmap font sizes that can be selected: 12, 14, 18 and 24 points, plus a user definable option that accepts anything from 10pt to 48pt. Sizes of 24pt and over are usually well formed by the automatic creation process, smaller sizes can be a bit iffy. The bitmap font editor enables you to clean up such fonts before exporting them.

Amiga, ABF and Soft-Logik bitmap fonts can all be imported and exported, along with single character bitmap templates. *ProPage* users should note that Amiga bitmap fonts exported from *TypeSmith,* cannot be used with *ProPage* because it doesn't save the 'metric' file that *ProPage* requires. All other software that uses Amiga bitmap fonts can use the ones exported from *TypeSmith*.

AUTOMATION

TypeSmith has excellent ARexx support, enabling many otherwise laborious tasks to be automated. Among the macros provided are: ones to move a character horizontally and/or vertically by the specified offsets; ones to remove any unnecessary points that are smack on top of other points; ones to automatically make a library of DR2D characters from a font; ones to automatically load a library of DR2D characters into a font; and ones to automate the process of converting a Compugraphic font into a Type 1.



Professional fonts are always well kerned. This one has more than 1,523 kerning pairs, just 13 short of the maximum number supported by TypeSmith.

All the documentation for the ARexx commands is contained in the on-line help file. This is an AmigaGuide document and is the best presented I have seen of this ilk. ARexx commands are indexed alphabetically and by subject, making it very easy to find the command you need. The documentation provided is pure reference (syntax and return codes, I mean), which is all ARexx programmers need. A very short tutorial is provided for beginners, along with a working macro that demonstrates the use of almost all of the *TypeSmith* ARexx commands. If you don't actually have a book on ARexx itself, you will need to buy one before learning how to write macros for *TypeSmith*. The on-line help suggests some books and there is an AmigaGuide on-line shareware tutorial available (written by Robin Evans – contact a PD library or BBS).

The AmigaGuide on-line help for *TypeSmith* isn't just about ARexx, it documents the whole program. After reading the proper manual once, chances are you will only have to pick it up again when referring to one of the helpful diagrams it contains. The on-line help really is that good.

Also supplied with *TypeSmith* is a separate *PostScript* font downloader that owners of *PostScript* printers can use to install *Type 1* fonts into the printer's memory. Multiple file selection is not supported, so you have to send them one at a time. You are, however, given the choice of sending to **SER:**, **PAR:** or a custom device name which will keep everyone happy, including multiport card owners.

There is no doubt about it, if you are serious about your Amiga desktop publishing, *TypeSmith* is an essential tool. Without an outline font editor, you are only half a desktop publisher and as *TypeSmith* is the only player on the field (and a good one), you don't need to think too hard on this one. AS

SHOPPING LIST

TypeSmith 2 .... £135
by Soft-Logik Publishing Ltd
Broadway House, 21 Broadway,
Maidenhead,Berks,SL6 1JK
☎ 0628 784006
Upgrade from V1 to V2...£35

CHECKOUT
PRODUCT NAME

Features
●●●●●●●●●○
For *PageStream* users, the ability to create bitmaps for your PostScript fonts is worth the asking price alone.

Documentation
●●●●●●●●●○
Clearly written, well presented and easily accessible.

Ease of Use
●●●●●●●●●○
TypeSmith is as easy to use as an outline font editor can be.

Speed
●●●●●●●○○○
TypeSmith isn't normally slow, but at times a short wait can be expected.

Value for Money
●●●●●●●●○○
As a creative tool *TypeSmith* represents excellent value for money.

Overall rating
●●●●●●●●●●
It would have been easy for Soft-Logik to leave *TypeSmith* alone, but version 2 contains many useful new features.

A Fairy-Tale For Programmers

AMIGA SHOPPER IT'S ON THE DISK

Oberon is the latest programming language from the creator of Pascal. Jim Hawkins introduces its key features – including object orientation and strong type checking – and explains just why you need it.

Oberon is the name of the King of the Fairies, the fourth moon of Uranus, or the latest major programming language. Oberon was married to Titania, which is also the name of the third moon of Uranus. That brings us up to date with moons and fairies, so let's have a look at the programming language.

"Why bother," I can see you thinking, "we have C, assembler, AMOS, Pascal, Blitz Basic, Forth, APL and Modula-2. Who needs another language?"

Let me give you some feedback on that thought by simply asking a question: Would you like to live next door to a nuclear reactor whose control systems were written in AMOS? Or C even? Britain's newest reactor was programmed in a mixture of C and assembler. It failed about 50% of the tests applied by the Nuclear Inspectorate. Partly as a result of that the Canadian Atomic Energy Commission has switched its safety-critical programming to Modula-2, the parent language of Oberon. In doing so they joined an impressive list of users, including Bosch, Boeing, the European Space Agency and NASA. The computers for the very successful Soviet space program were programmed with Modula-2. Oberon is essentially the latest version of Modula.

Unfortunately, there isn't enough space here for me to go into any great depth and provide a total guide to programming in Oberon-2. If, however, you've programmed in Pascal or C before, you should find the following text easy to follow.

ETH is the technical institute in Zurich. The computer science department there, led by Professor Niklaus Wirth, specialises in creating computer languages. Pascal is probably the best known of these. Pascal is the parent language of a group which has been designed with safety in mind. The actual family tree of Oberon-2 is: Pascal-> Modula-2-> Modula-3-> Oberon-1-> Oberon-2. Although it's quite possible to get bugs in a Modula-2 or Oberon-2 program, it's much harder to get really *stupid* bugs than it is in C. Essentially this is because the compilers are designed to trap most errors before you even run the code. Here is a classic C problem:

```
if (!(coreState=OK)) ShutDown();
```

C has a lethal flaw in it. The fragment above will *never* shut down the reactor. The explanation for this is that before it tests **coreState**, the program sets it to **OK**. The = in the example should be ==. That is very sloppy language design.

If you think that's merely academic, a problem in the Amiga's libraries was finally solved in Workbench 3.0 when a rogue = that should have been == was discovered. Not only is this potentially dangerous, it's also very time consuming to debug. (This might explain why about 80% of programmers' time world-wide is spent on supporting programs, not creating new ones.) You will never come across that problem in a Modula-2 or Oberon program, because the syntax for assignment and testing make is impossible. If I were to write...

```
IF (~(coreState:=OK)) THEN
ShutDown; END;
```

...the compiler would reject it. It not only might be, but *must* be = rather than :=.

A second problem with C (there certainly are a fair number of them), is that although you can write, compile and link a large number of separate chunks of source text into a program, it's totally the responsibility of the programmer to ensure that one module does not incorrectly change a crucial variable in another one. Imagine 25 programmers working on our reactor. That little one-line example above could interfere with what **coreState** was supposed to be, even if another module written by somebody else was dealing with it correctly. Oberon-2 has the neat idea of *read-only* variables. Only the module (and programmer) that own them can mess with these.

Oberon-2 is a tiny, Object Orientated language. You can quite easily learn its basics in a few minutes, and, who knows, you may be working for NASA next week. There are very few reserved words to learn. They are:

```
MODULE BEGIN END IMPORT
PROCEDURE VAR CONST RECORD TYPE
POINTER TO NIL
LONGREAL REAL LONGINT INTEGER
SHORTINT CHAR SET ARRAY OF
IF ELSE ELSIF
WHILE REPEAT UNTIL FOR BY LOOP
EXIT RETURN DO
IN IS WITH
& ~ OR
+ - >= <= * DIV MOD / = # := ^
. .. ; : | ( ) [ ] { }
```

The word that separates the bugs from the antiseptic here is **MODULE**. Oberon-2 and Modula-2/3 are (like ADA) Modular languages. If you've ever waded through the morass of the Amiga includes, you will know that they are split up into lots of tiny bits like **<exec/memory.h>** and **<exec/nodes.h>**. If you **#include** these, they will simply be read with your source code. They will probably themselves **#include** other things. Although these look like separate modules, or lumps of busy stuff, what you actually have is a text-editor loading and reading file after file until the whole mess has finally been comprehended (or not). SAS tried to address this problem with their GST (Global Symbol Table) system, perhaps because programmers were coming in on Monday to compile and returning on Tuesday to see if it worked.

Modular languages use a different approach. A program may be just one module or many. When a module is successfully compiled it creates a symbol file. The symbol file for this module contains all the crucial information about the names and sizes of things. You use these modules in your program by telling the compiler that you want to **IMPORT** something. The symbol file is designed for fast access, so that Oberon or Modula-2 compilers are usually magnitudes faster than the archaic **#include** mechanism. The only actual source read by an Oberon compiler is the source of the module you're currently working with.

Oberon-2 is an Object Orientated language, like C++ or SmallTalk. OOP is a buzzword at the moment and surrounded by hype. Really it's just a different style of programming that has some safeguards built in. An object is basically one or more items of data and some code to deal with the data. Listing 1 shows a complete module that pretends to deal with graphic shapes. It doesn't really, just to keep things short and simple.

Have a good look at Listing 1, and you will see the basic framework of a module:

MAINTAINING STANDARDS

Oberon and Modula-2 are covered by the Modular language' Special Interest Group of the BCS. Membership can be secured via RTA. The cost per annum is £20 for non-BCS members and £8 for BCS members. A free magazine and special offers on conferences are included in the membership.

USING THE OBERON DEMO

You'll find a fully working demo of *X2C*, an Oberon to C translator, on this month's cover disk. Turn to page 8 to discover how to de-archive it.

***X2C* will convert the many supplied examples into C source code. You will need a C compiler package (such as DICE, given away with issue 33) to then translate this into executable form. For more information, consult the doc files supplied.**

```
MODULE shapes;
IMPORT i:=InOut;
(* various stuff *)
END shapes.
```

The **IMPORT** here says that the module wants to use the basic print routines. It just uses two: **WriteString** and **WriteLn**. **WriteString()** writes some text to the output window and **WriteLn** writes a carriage return.

Inside this module are definitions of objects **(RECORD)**, variables **(VAR)** and code to work on them **(PROCEDURE)**, plus a few things that never change **(CONST)**.

Modules may export things for use in other modules. In Oberon, these are marked with * or –. A * sign means that any other module can use or alter something. For example we could declare:

```
VAR messWithMe * :LONGINT;
```

A – sign means that another module may read the value but not change it:

```
VAR numberOfShapes - :LONGINT;
```

All modular languages use the idea of data hiding to prevent disasters. Data hiding is like "need to know" in spy talk. What you don't know can't kill you. Oberon-2 takes this further than any other language by making it possible to export **RECORD** definitions (like **structs** in C) with only part of them visible:

```
TYPE Shape * = POINTER TO
ShapeDesc;
      ShapeDesc * = RECORD
      x,y,colour:INTEGER;
      END;
```

Here we have a **POINTER** type (a four byte variable that contains the address of something in memory) and a **RECORD** type called **ShapeDesc**. Any module can have these **Shape** things, but it may not know about the internals of them. They are private. The **Shape** objects, however, have **PROCEDURES** bound to them that are allowed to change the internal data:

```
PROCEDURE ( s:Shape) MoveTo * (
x,y:INTEGER);
```

This code changes the **x** and **y** values inside a **Shape** object. It only works with objects that are of type **Shape**, and it's said to be "bound" to the **Shape** objects – it cannot work with anything else, except objects which are descendants of **Shape** types. So instead of directly changing the shape's position, what we are doing is sending it a command to move itself. All objects that are based on the **Shape** object will be able to understand **MoveTo()**.

As defined, a **Shape** object only has position (**x,y**) and colour. It's not a very graphical object at all. If we use the **Draw()** procedure on an object of type **Shape**, it merely prints out its position.

We can make much more useful objects by extending the basic definition in various ways. A rectangle will have both width and height, as well as position and colour, if we declare:

```
TYPE Rectangle = POINTER TO ▼☛
RectangleDesc;
      RectangleDesc = RECORD ▼☛
(ShapeDesc)
      width,height:INTEGER;
      END;
```

The Rectangle

LISTING 1

The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

Source code for Shapes

```
MODULE shapes;
(* An incomplete module to handle graphic
objects in Oberon-2. Mostly self-documenting.
*)
IMPORT i:=InOut; (* Text and number writing
routines *)

CONST MaxColour * = 255;
      MinColour * = 0;

(* definitions of objects and variables
*******************************)

TYPE  Shape * = POINTER TO ShapeDesc;
      ShapeDesc * = RECORD
       x,y,colour :INTEGER; (*current ▼☛
position *)
      END;

      Rectangle * = POINTER TO ▼☛
RectangleDesc;
      RectangleDesc * = RECORD (ShapeDesc)
       width,height:INTEGER;
      END;

      Circle * = POINTER TO CircleDesc;
      CircleDesc * = RECORD (ShapeDesc)
       radius:INTEGER;
      END;

VAR numberOfShapes- :LONGINT;
   (* This is read-only for other modules.
They can peek but
       not poke *)

(* definitions of procedures (methods, code)
for objects *************)

PROCEDURE (s:Shape) SayPosition *;
(* Write the object's current position *)
BEGIN
  i.WriteString("I am at: ");
  i.WriteInt(s.x,4);
  i.WriteInt(s.y,4);
  i.WriteLn;
END SayPosition;

PROCEDURE (s:Shape) MoveTo * (x,y:INTEGER);
(* Move the object to a new place *)
BEGIN
  s.x:=x;
  s.y:=y;
END MoveTo;

PROCEDURE NewRectangle * ():Rectangle;
(* Obtain a new Rectangle object *)
VAR temp: Rectangle;
BEGIN
  NEW(temp);
  temp.width  := 0;
  temp.height := 0;
  temp.colour := 0;
  temp.x := 0;
  temp.y := 0;
  INC(numberOfShapes);
  RETURN temp;
END NewRectangle;

PROCEDURE NewCircle * ():Circle;
(* Obtain a new Circle object *)
VAR temp: Circle;
BEGIN
  NEW(temp);
  temp.colour := 0;
  temp.x := 0;
  temp.y := 0;
  temp.radius := 0;
  INC(numberOfShapes);
  RETURN temp;
END NewCircle;

PROCEDURE (r:Rectangle) Size *
(width,height:INTEGER);
(* set the width and height of a rectangle
with no error checking. Normally we would
whinge about silly dimensions. *)

BEGIN
  r.width:=width;
  r.height:=height;
END Size;

PROCEDURE (c:Circle) Size * (radius:INTEGER);
(* set the radius of a Circle object *)
BEGIN
  c.radius:=radius;
END Size;

PROCEDURE (s:Shape) Draw *;
(* This is the base-type or Class procedure
for a graphic object that has no real spacial
existence, and might just be a point. *)

BEGIN
 s.SayPosition;
END Draw;

PROCEDURE (r:Rectangle) Draw *;
(* draw is redefined for rectangles *)
BEGIN
 IF ((r.width=0) OR ▼☛
(r.height=0)) THEN ▼☛
RETURN; END;
  r.Draw^;
  i.WriteString("OK. I'll draw a ▼☛
rectangle.");
  i.WriteLn;
END Draw;

PROCEDURE (c:Circle) Draw *;
(* draw is redefined for circles *)
BEGIN
  IF c.radius<=0 THEN RETURN; END;
  c.Draw^;
  i.WriteString("OK. I'll draw a circle.");
  i.WriteLn;
END Draw;

PROCEDURE (s:Shape) SetColour * ▼☛
(colour:INTEGER);
(* set the colour to a sensible value *)
BEGIN
  IF (colour>=MinColour)&☛
(colour<=MaxColour) THEN ▼☛
s.colour:=colour;END;
END SetColour;

PROCEDURE (r:Shape) FilledDraw *;
(* This procedure is bound to the base type,
but will handle
  anything it knows about by checking the
type-guard for any
  object passed to it that is a descendent
of type Shape. *)

BEGIN
 r.Draw;
 i.WriteString("Let's fill something ▼☛
with colour ");
 i.WriteInt(r.colour,3);
 i.WriteLn;
 WITH r: Circle DO i.WriteString("Fill ▼☛
a circle");
    | r: Rectangle DO i.WriteString("Fi☛
ll a rectangle");
 ELSE
 i.WriteString("Unknown type of shape!");
 END;
 i.WriteLn;
END FilledDraw;

BEGIN (* This is called at program start *)
numberOfShapes := 0;
END shapes.
```

LISTING 2

Browser output for shapes.

```
DEFINITION shapes;

CONST
  MaxColour* = 255;
  MinColour* = 0;

TYPE
  Circle*       = POINTER TO CircleDesc;
  CircleDesc*   = RECORD (ShapeDesc)
    PROCEDURE (c: Circle) Size*(radius: INTEGER);
  END;
  Rectangle*      = POINTER TO RectangleDesc;
  RectangleDesc* = RECORD (ShapeDesc)
    PROCEDURE (r: Rectangle) Size*(width,▼☛
height: INTEGER);
  END;
  Shape*          = POINTER TO ShapeDesc;
  ShapeDesc*      = RECORD
    PROCEDURE (s: Shape) Draw*;
    PROCEDURE (r: Shape) FilledDraw*;
    PROCEDURE (s: Shape) MoveTo*(x,y: INTEGER);
    PROCEDURE (s: Shape) SayPosition*;
    PROCEDURE (s: Shape) SetColour*(colour: ▼☛
INTEGER);
  END;

VAR
  numberOfShapes-: LONGINT;

PROCEDURE NewCircle*(): Circle;

PROCEDURE NewRectangle*(): Rectangle;

END shapes.
```

inherits all the properties of a **Shape** and all the procedures that **Shape** knows about. In Listing 1, there is a **Draw** procedure bound to type **Shape**, but **Rectangle** can redefine that to suit its own purposes:

```
PROCEDURE (r:Rectangle) Draw * ;
BEGIN
  IF (r.height=0) OR ▼☛
(r.width=0) THEN RETURN; END;
  r.Draw^;
  i.WriteString("OK. I'll ▼☛
draw a rectangle.");
  i.WriteLn;
END Draw;
```

We now have two procedures called **Draw**, but they work with different objects. **Rectangle** has its own **Draw**, which in reality would draw a rectangle outline. This little example procedure includes the line:

```
r.Draw
```

This means: "Call the **Draw** procedure that I'm redefining" Instead of calling a procedure and passing a structure to it, we are asking the data object to do the procedure that is bound to it.

Listing 1 also defines a **Circle** type which has a radius instead of width and height. Both **Circle** and **Rectangle** are "descendants" of the type **Shape**, but have their own fields and procedure re-definitions.

If you look at the **FilledDraw()** procedure in listing 1 you will see how all of this comes together. **FilledDraw()** is bound to the **Shape**, which we call the base type, for both **Rectangle** and **Circle**. We can, however, pass to it any object which is a descendent of **Shape**, like **Circle** or **Rectangle**, and ask it to take appropriate action. This happens with all of these objects while the program is running and so these objects are dynamic. **FilledDraw()** doesn't know what they might be until it is presented with them. The important word here is **WITH. WITH** decides what an object is and handles it appropriately:

```
  WITH r: Circle DO ▼☛
i.WriteString("Fill a circle.");
    | r: Rectangle DO ▼☛
i.WriteString("Fill a rectangle")
  ELSE i.WriteString("Un▼☛
known type of shape!");
  END;
```

Here is a short example module that **IMPORT**s shapes and operates almost all of the code:

```
MODULE UseShapes;
IMPORT s:=shapes;

PROCEDURE example;
VAR rec :s.Rectangle;
    circ:s.Circle;

BEGIN
 rec:=s.NewRectangle();
 rec.Size(100,200);
 rec.MoveTo(10,10);
 rec.SetColour(191);
 rec.FilledDraw;

 circ:=s.NewCircle();
 circ.Size(127);
 circ.MoveTo(43,45);
 circ.SetColour(128);
 circ.FilledDraw;
END example;

BEGIN
example;
END UseShapes.
```

You can see the redefined procedures here because a **Rectangle Size()** requires both width and height, whereas a **Circle Size()** requires only radius. The art of Object Orientated Programming is to make as much as possible common to all objects of a particular base type.

If you've journeyed this far towards Oberon, you'll see that I can work away on the **shapes** module while you do something else. We can also both rest assured that I will never touch your code and variables, and you will never touch mine. But how do I tell you what you have available? This is handled by the browser, which looks at the symbol file and produces a DEFINITION file that lists all the public objects, variables, constants, and procedures. Listing 2 shows the browser output for **shapes**.

Oberon-2 applies OOP ideas even to the use of numbers. All numbers are considered to be in a hierarchy. Bigger number types "enclose" smaller types. **LONGREAL** (**double** in C) holds **REAL** (**float**) which holds **LONGINT** (**long**) which holds **INTEGER** (**short**) which holds **SHORTINT** (**signed char**). There are *no* unsigned numbers in Oberon apart from type **CHAR**.

This attitude to numbers eliminates most number casts, and the compilers are expected to handle the numbers correctly.

Sets are very much like Pascal sets – an almost indispensable part of painless programming, but we'll leave that for another time. AS

JARGON BUSTING

Compiler – A means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. The compiled program is generally much faster than its interpreted counterpart.

Include files – Supplied by Commodore, they provide all the offsets needed to access system library routines, and the formats for all system structures.

OOP – Object orientated programming is a way of writing programs such that the data to be processed, rather than the procedures to operate on the data, is given priority. Each data item is defined as an object with certain properties. The object definition also includes a number of procedures which can be applied to the object. These procedures are carried out by passing messages to the object, rather than, as is more usual, passing data to separate procedures.

Structure – A class of data storage in C whereby a group of primitive data types – for example, integers, strings and floating point variables – are grouped together in a particular order to form a user-defined variable type.

Type Checking – The process by which a compiler ensures the correct kinds of values are being assigned to the correct kinds of variables. Variable types are checked not just in assignment statements, but also in relational expressions and in the passing of parameters to procedures.

WHERE TO GET IT

PRODUCTS
There are two Oberon-2 compilers for the Amiga:

A&L Oberon-2 is a Swiss compiler. It's very fast and produces extremely small and efficient code. Currently the only manual is in German.

Extacy is a cross-platform translator that compiles either Modula-2 or Oberon-2 to ANSI C. It will require a C compiler and it also works perfectly with SAS/C 6.xx and above. To some extent,if not fully, it works with DICE which is not fully ANSI C.

PRICES
A&L Oberon-2 (German manual)
Price: £150 (plus VAT)
A&L MS Amiga (Modula 2 compiler) Price: £250 (plus VAT)
Extacy
Price: £150 (plus VAT)

For further information contact:

RTA (Real Time Associates)
Canning House
59 Canning Road
Croydon CRO 6QF
Tel: 081 656 7333

EXPLOSIVE DESKTOP DYNAMITE DEAL FROM INDI !!

FREE 2 CLASSIC GAMES

DIRECT MARKETING ASSOCIATION

THIS MUST BE THE BEST VALUE DEAL EVER AND NOT SURPRISINGLY IT'S INDI THAT SHOWS THE WAY. THE GREAT VALUE **DESKTOP DYNAMITE PACK** WITH OVER **£300** OF **FREE** SOFTWARE **PLUS** 2 NEW CULT GAMES **PLUS** A NEW LOW LOW PRICE



BATMAN RETURNS

New Game

You may choose from many different roles from explorer to assassin, from stockbroker to trader. Battle with pirates across a galaxy of different worlds, trade or smuggle goods or become a pirate yourself. the goals to aim for are endless, the game is completely open ended.

£29.99 "The ultimate in space adventure Frontier is the important step forward from this decade" - CU Amiga 97%

FRONTIER ELITE II

New Game

An exciting program from the first film simulation. Vastly different to the console version with vivid scenes straight from the hit movie. Batman has returned in style. **£29.99**



Desktop Dynamite Pack



A1200 STANDARD FEATURES

* 68020 Processor * PCMCIA Slot * 2Mb Chip RAM * 3.5" Internal Floppy Drive * AA Chipset * Built in TV Modulator * Alpha numeric Keypad * 12 Months at home maintenance.

FREE

* Wordworth AGA * Print Manager * Deluxe Paint IV AGA * Oscar AGA * Dennis The Menace AGA

£329.99

Hard Drive Options

85 Mb Hard Drive Pack	£509.99
120 Mb Hard Drive Pack	£559.99
170 Mb Hard Drive Pack	£599.99

12 Months At Home Warranty from ICL

New Desktop Dynamite Pack with FREE Classic Games and a Professionally fitted Hard Drive Option

Desktop Dynamite Panasonic Colour Printer Pack

ICL AT HOME

The Superb Desktop Dynamite pack

PLUS

The Best Selling **Panasonic KX - P2123** Quiet Colour Printer with **FREE** Dustcover

PLUS

Gametek Frontier Elite II and Batman Returns

PLUS

Amiga Challenge: International Sports Challenge, Paradroid 90, Cool Croc Twins

£519.99

Hard Drive Options

Desktop Dynamite Colour Printer Pack with fitted Hard Drive.

85 Mb Hard Drive Pack	£769.99	170 Mb Hard Drive Pack	£809.99
120 Mb Hard Drive Pack	£779.99	12 Months At Home Warranty from ICL	

EXTENDED WARRANTY ON COMMODORE PRODUCTS 'FOR PEACE OF MIND'

For as little as £39.99 ICL the major European computer giant are able to extend the At Home service on most new Commodore Products to a full 3 years. ICL are the main authorised Commodore Warranty Company and can offer a variety of warranty options to suit all needs. Why not call for details.

WARNING

Some advertisers are fitting 3.5" drives to the Amiga 1200. The Amiga was never designed to accept 3.5" drives and fitting one totally invalidates any Commodore Warranty. Indi only offer official 2.5" IDE drives officially accepted by Wang, ICL and Commodore.

AMIGA 600 AND 1200 DRIVES FITTED BY ICL

"We'll pick it up from your home, bring it back in 5 working days, give it 12 months on site warranty and that's just the beginning".

When the time comes that you just have to fit a Hard Drive to your Amiga 1200 or 600 it is important that your Amiga is handed by the experts. ICL are a Giant International Computer Manufacturing and Repair Company and have been chosen by Commodore as their authorised warranty company for Amiga products.

Through INDI the Nationwide resources of ICL will guarantee that your Amiga is treated with the care and expertise that it deserves. But that is just the beginning, your new hard drive will be given a full 12 months At Home Warranty cover. Yes if there is a warranty problem then ICL will come to your home and fix it.

Of course what's the point of having at home cover on your Hard Drive and not on your Amiga. So as part of the deal ICL will add a further 12 months at home cover to your Amiga completely FREE

DOOR TO DOOR 85Mb HARD DRIVE ENHANCEMENT SERVICE £239.99

DOOR TO DOOR 120Mb HARD DRIVE ENHANCEMENT SERVICE £279.99

DOOR TO DOOR 170 Mb HARD DRIVE ENHANCEMENT SERVICE £319.99

Complete with 12 Months At home Service through ICL

*Amiga 1200 must be in full working order.

Amiga 1200 / 030 Desktop Dynamite Professional Pack

"Approx 1.5 times faster than an A4000/030

This is the ultimate power configuration, if your dream is to own the quickest A1200 ever then take a look at this specification: *Amiga 1200 *4Mb 32 - bit Fast RAM (Expandable to an Amazing 128 Mb!!) * Microbotics M1230 XA W/50MHZ MMU (Approx 1.5 times faster than an A4000/030!!) * 12 Months at home Warranty * Choice of hard drive capacities * Optional 50 MHZ 68882 FPU Maths Processor.

85 Mb version	£869.99
120 Mb version	£899.99
170 Mb version	£929.99
68882 50 MHZ FPU	£132.54

1/2 PRICE GAMES OPTION

Add Batman Returns and Elite II for only **£29.99**

A1200 Microbotics Memory Expansion Boards and Acclerators

Do you want your Amiga 1200 to have more memory or to go faster by simply fitting a board into the external trap door? Microbotics have an extensive range of products with the immense benefit of 'Chipup' technology. Most boards have soldered chipsets which do not allow expansion beyond your initial purchase. Microbotics products allow you to add extra memory as your computing skills grow and new software arrives demanding even more memory.

Memory Expansion Boards

Speed	4Mb	8Mb
14 Mhz	£247.99	£447.99
25 Mhz	£307.99	£517.99
50 Mhz	£377.99	£577.99

Accelerator Boards

Speed	4Mb	8Mb
40Mhz	£365.99	£595.99
50 Mhz	£475.99	£709.99

CHIPUP Technology

TEL: 0543 419 999 FAX: 418 079

AS0494

INDI DIRECT MAIL
1 RINGWAY INDUSTRIAL ESTATE, EASTERN AVENUE, LICHFIELD STAFFS. WS13 7SF

INDI DIRECT MAIL

Please send 1)..........
2)..........
3)..........
Price.......... I enclose cheque/ PO for £.......... or charge my Access/ Visa No..........
.... Expiry....../....../
Signature..........
Name..........
Address..........
....
Postcode..........
Indicate if alternate delivery address
Daytime Tel..........

No Deposit Credit

Indi are now able to offer Competitive Credit Facilities on all orders over **£100** subject to status. Payment can be over **12, 14, 36, 48 or 60 months** and can include insurance to cover repayments on the event of sickness or unemployment. Why not ring for a quote. Sameday response.

THE STORY SO FAR...



BUT WHAT'S



EIGHT GOOD REASONS WHY YOU SHOULD SUBSCRIBE TO *AMIGA SHOPPER*

1. You make sure of your copy each and every month – guaranteed!

2. Your copy is delivered direct to your door – no more queuing at the newsagent's.

3. You receive an exclusive subscribers' newsletter every month into the bargain, full of fascinating behind-the-scenes information, at no extra cost.

4. You are guaranteed no price increases for a full 12 months, even if the price goes up.

5. You pay no more for any higher-priced issues with special cover-mounted promotions.

6. If you use the handy direct debit form, you save a whopping £5 off the news-stand price.

7. With direct debit, there are no more forms to fill in when your subscription runs out – we do all the work for you.

8. And of course, you'll receive a specially-designed *Amiga Shopper* binder, worth £4.95, absolutely free.



AMIGA SHOPPER IT'S ON THE DISK

SAILING THROUGH C

The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

This month Toby Simpson shows you how to enhance and improve your address book application.

Last month we finished off our basic address book application. It's now up to you how you choose to enhance and improve the program. Users who have 2.04 and above of the operating system can make some considerable enhancements to utilise some of the advanced features of these newer Amigas, particularly in the area of presentation. Further down the line still is 3.0 and even 3.1, with added extra features that you can use. This month we shall look at some of these goodies and give some examples of their use.

Anyone who has used both 1.3 and one of the newer operating systems on the Amiga, such as Kickstart 2.04, will realise just what a difference there is. From the user's point of view there is much more of a standard interface. The operating system, for the first time, provides basic requesters, such as file and font requesters. This means that all programs could use the same requester rather than having to roll their own. From the programmer's point of view, using little things, such as the standard file requester, means that you do not have to reinvent the wheel every time you want one. It reduces the time you have to spend programming the basic building blocks and means you can spend that saved time making your application more powerful.

Also, users of 2.04 and above are treated to a much cleaner user interface. All the windows and gadgets are far neater and everything generally holds together far better. The Workbench was improved considerably, and actually became useful. In addition, preferences had a total overhaul and AmigaBASIC was removed and replaced with ARexx. I don't think anyone misses AmigaBASIC. It was tediously slow and unreliable, and broke all sorts of programming rules.

Developers were treated to whole new operating system libraries, filled with new routines and considerable enhancements to the existing ones. In general, 2.04 made operations that were previously extremely complex to perform much easier and less prone to commit errors. Let's kick off with an example.

With our address book application we opened our window using **OpenWindow**. If Commodore added a whole bunch of new features to windows (which they did), then it would become harder and harder to pack them all into the **NewWindow** structure. An extendible method of passing parameters to functions was needed, so features could be added in the future without making them incompatible with previous ones. The solution Commodore came up with was Tag Lists. Let's open a window!

```
/* Save as window.c and type:
** dcc window.c -o window.x
**  to compile using dice.
*/
#include <stdio.h>
#include <intuition/intuition.h>
#include <clib/dos_protos.h>
#include <clib/☛
intuition_protos.h>

void main(void)
{
  struct Window *our_window;

  /*
  ** Open window
  */
  if (!(our_window =
OpenWindowTags(NULL,
     WA_Title, "Our window!",
     TAG_DONE)))
       {
       printf("Unable to open ▼☛
window.\n");
       return;
       }

  /*
  ** Wait a couple of seconds then
close it and quit
  */
  Delay(100);

  CloseWindow(our_window);
}
```

Uh... was that it? Yes, no complex **NewWindow** structure. This is typical of the simplification made for developers. Many previously intricate and problem-fraught operations were suddenly blissfully easy. Back to Tags. What exactly *is* a Tag List?

A Tag List is simply a continuous collection of **TagItem** structures, terminated at the end with a **TAG_DONE**. For 'C' developers there are typically two versions of routines like **OpenWindowTags**. One takes a pointer to an array of Tags and one (which we used above) takes the Tags as arguments in the function-call itself and supports a varying number of Tags. So, what sort of Tags do we have available to us? With **OpenWindowTags** there is a whole bundle. We could make our window a little more interesting by changing our Tag List from the above single **WA_Title** (which, if you have not already guessed it, allows us to set the title of the window), to this little lot:

```
WA_Title, "Our window!",
WA_Left, 100,
WA_Width, 300,
WA_Top, 50,
WA_Height, 150,
WA_SizeGadget, TRUE,
WA_DragBar, TRUE,
WA_CloseGadget, TRUE,
WA_RMBTrap, TRUE,
TAG_DONE
```

Now we get a far more interesting window. There are many more Tags for **OpenWindowTags**. For a complete run-down of them you can either examine the **AutoDocs** for the Intuition library, or you can consult the *Amiga Reference Manual Libraries*, which contain a detailed description of how windows work.

The other handy thing about Tags is that they are future proof. Under 3.0 they added a number of new Tags to **OpenWindowTags**. One, for example, is called **WA_NewLookMenus** and is used to specify the new black on white menus that you see with workbench 3. If we specify this Tag and attempt to run the program under 2.04, nothing happens. **OpenWindowTags** simply ignores Tags that it does not

LISTING 1

```
/* Type in and save as asl.c. Compile under
dice by typing:
dcc asl.c -o asl.x */

#include <stdio.h>
#include <exec/types.h>
#include <exec/libraries.h>
#include <libraries/asl.h>
#include <clib/asl_protos.h>
#include <clib/exec_protos.h>

struct Library *AslBase;

void main(void)
{
  struct FileRequester *fr;

  /* Open the asl.library */
  if (!(AslBase = OpenLibrary("asl.library",
37L)))
    {
    printf("Unable to open asl.library
V37\n");
    return;
    }
/* Create and display a file requester */
  if (fr = (struct FileRequester
*)AllocAslRequestTags(ASL_FileRequest,
TAG_DONE))
    {
    if (AslRequestTags(fr,
              ASLFR_TitleText, "Pick a file!",
              ASLFR_PositiveText, "OakeDoake",
              ASLFR_NegativeText, "Whoops",
              TAG_DONE))
        {
        printf("You ▼☛
selected:\nPath:%s\nFile:%s\n", fr->rf_Dir,
fr->rf_File);
        }
      else
        printf("You pressed ▼☛
cancel.\n");
    }
  else
    printf("Unable to create requester\n");
  CloseLibrary(AslBase);
}
```

LISTING 2

```
/* Save as screen.c and compile with DICE
using:
**   dcc screen.c -o screen.x
*/

#include <stdio.h>
#include <exec/types.h>
#include <exec/libraries.h>
#include <intuition/intuition.h>
#include <clib/dos_protos.h>
#include <clib/exec_protos.h>
#include <clib/intuition_protos.h>

struct Library *IntuitionBase;

void main(void)
{
  struct Screen *our_screen;
  struct Window *our_window;

  /* Open the intuition.library */
   if (!(IntuitionBase =
OpenLibrary("intuition.library", 37L)))
     {
     printf("Unable to open intuition.➡
library V37\n");
     return;
     }
   /* Open our screen: */
   if (our_screen = OpenScreenTags(NULL,
     SA_Title, "Our test screen!",
     SA_Depth, 2,      /* Number of bitplanes,
this gives us 4 colours */
     SA_AutoScroll, TRUE,
     SA_DisplayID, HIRES_KEY, /* 640x256 */
     SA_Interleaved, TRUE,           /*
Interleave screen, faster for WB3 users */
     TAG_DONE))
     {
       /* And lets open a window for good
measure! */
       if (our_window = OpenWindowTags(NULL,
         WA_PubScreen, our_screen,
/* Ensure it opens on our new screen */
         WA_Title, "And a window too",
         WA_Top, 50,
         WA_Height, 100,
         WA_Left, 10,
         WA_Width, 200,
         TAG_DONE))
         {
         /* Wait a tad, then close and exit */
         Delay(100);
         CloseWindow(our_window);
         }
       else
         printf("Unable to open window\n");
       CloseScreen(our_screen);
       }
     else
       printf("Unable to open our screen\n");
     CloseLibrary(IntuitionBase);
   }
```

understand. This will make it easy for you to write programs that take advantage of new operating system features without losing compatibility with previous versions. Getting clever, isn't it?

Let's look at the **ASL.library**. This is a useful addition and provides a font requester and a file requester. In addition, if you have Workbench 2.1 or above (version 38 or above), you also have access to a rather nifty screen mode requester. Have a look at Listing 1 for a small demonstration of the **ASL library** which opens a file requester and shows us which file we selected on the screen.

If you have problems compiling the above program with **DICE**, particularly if the compiler objects to the **AslRequestTags** function, then it's likely that you have not updated your **amigas20.lib** file that **DICE** uses. I assume that you have the official Amiga include files, since without them you would not be able to compile any of this month's examples anyway. Supplied with your Amiga Developers Upgrade kit you will find a file called **amiga.lib**. Find it and from the shell type:

```
libtos amiga.lib ▼➡
dlib:amigas20.lib
```

Press return. **Libtos** is a **DICE** utility and it can be found in your **DICE:bin/** drawer. This will update your linker library to contain the most up-to-date list of Amiga functions. Users of commercial compilers, such as SAS C, are unlikely to have any problems as these compilers use Commodore's **amiga.lib** file directly.

You'll notice how easy it was for us to create and show a requester. The program would not have been much longer if we'd opened a screen and a window and then the **ASL** requester on top of all that, simply because we would be able to use the newer **TagList** functions. Screens are something we have not dealt with before, mostly because of the horrific structures involved in getting one to open, but also because it was not strictly necessary with our address book application. There are times though, where you might want to open a whole new screen for your program, rather like *DeluxePaint* does, for example. Under 2.04, this is really a breeze. See Listing 2 for how this is done.

Under 1.3 of the Amiga OS this would have been much harder to do and the program would have ended up much larger. For good measure, we also opened a window on our new screen. We were able to specify what screen mode it was and how many colours we had. We specified a 3.0 and above only Tag, **SA_Interleaved**, which makes screen scrolling less jerky and tends to remove colour separation problems when colour objects move fast. Tags, of course, don't mean that the program is incompatible with 2.04. In fact, it will work fine. See the autodocs for **OpenScreenTags** for a full description of the things you can do, and the include file **intuition/screens.h** for a list of Tags you can pass to **OpenScreenTags**.

What we have seen here is a very small subsection of what is present in 2.04 and above. There are whole areas that we have not covered, such as the useful **gadtools.library** which makes construction of 3D-style neat gadgets very easy. In addition, there is BOOPSI (Basic Object Orientated Programming System for Intuition), which brings object orientated programming to Intuition. We will look into this in a later issue of *Amiga Shopper* as it is quite a complicated topic.

AmigaDOS also received a major overhaul with a wide range of new functions available to the programmer, from proper buffered read and write to functions for finding the date and time of day. If you compare the list of functions from 1.3 to 2.04 in the **DOS.library**, you'll see that it received a considerable update. It also contains some very useful additions, such as **AddPart** which adds a filename to an existing path, automatically ensuring any necessary **/'s** are present. As well as **AddPart**, there is also **FilePart** which returns the filename at the end of a long path. So if you did this:

```
printf("file = %s\n",
FilePart("sys:prefs/sys/env-
archive/workbench"));
```

You'd get the result:

```
file = workbench
```

This sort of utility function is useful for processing results of actions, like the file requester, which returns the path and the file name separately. Using **AddPart** you can join them together in a reliable fashion.

NEXT MONTH

If you tune in next month, I will let you have a look at ARexx and show you how you can add ARexx facilities to your program, in particular to our handy little address book application. See you then! AS

JARGON BUSTING

Auto Docs – The AutoDocs are the documents supplied with the Amiga Developers Kit which describe in detail every function in the Operating System and what it does. It is invaluable reference material for the developer. As well as coming on disk with the developers kit, an older version for Kickstart 2.04 is available in a book called "Amiga ROM Kernal Manual: Includes and Autodocs", third edition, which will set you back around £30.

VERSIONS

You'll see that this month we've been opening libraries and specifying a minimum version of 37. This is the version that corresponds to Kickstart and Workbench 2.04. You may be interested to know what all the versions in current use are:

33 Kickstart 1.2. Oldest supported version.
34 Kickstart 1.3.
35 Special Kickstart for users of Commodore's weird hi-res mono-monitor!
36 Workbench 2.00. Found on early A3000s
37 Workbench 2.04, as shipped on A500+s, A600s and most modern A1500/A2000s before they were discontinued.
38 Workbench 2.1. Never really shipped at all, although some people managed to obtain it. It was a great improvement over 2.0, offering postscript support and the Locale system for proper localisation of the Workbench in different countries.
39 3.0. As found in A1200s, A4000s.
40 3.1, as shipped with the CD32.

Accounts Master

Mark Smiddy takes a look at a new budget tool that is offering to balance your cheque book and keep your finances in beautiful order.

While computers are brilliant at working with mathematics, the day-to-day, nitty-gritty of home accounts is often left to the human factor. Automating such tasks can be a bind and dedicated, Amiga-based, applications are few and far between, the most notable to date being Digita's excellent *Home Accounts 2*.

Digita's offering is powerful, easy to use and user-friendly, which begs the question: Why would anyone want to compete with it? Computerising home finances is not everyone's idea of a quiet evening in front of the micro and surely the market is well covered. So what can this newcomer offer?

Being realistic, at just £6 (less than most shareware) you can hardly expect the bee's knees on the presentation front. *Accounts Master* comes on a single disk with a badly photocopied, printed manual. However, it is also reasonable to expect something for the money and while the presentation and non-existent packaging is reminiscent of the 8-bit days, the software is something else.

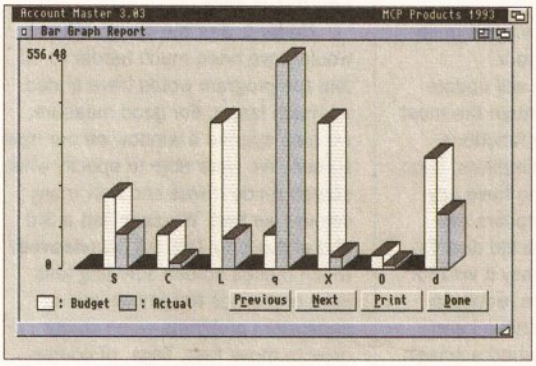
Although programmed in AMOS, a great deal of time and effort has been spent on giving the program a professional Workbench 3 look and feel. Sure, we've all heard that one before, but *Account Master* is genuinely different. All main actions are directly accessible via a toolbar ranged along the base of the screen, each correctly underscored to highlight the keyboard shortcut. Attention to detail has been addressed to the extent that when the screen is depth arranged, a requester pops up to remind the user how to return to the program (AMOS certainly breaks Intuition style rules on this point).

As with most simple accounting jobs, *Accounts Master* does very little that could not be achieved on a basic spreadsheet or a programmable database. However, such jobs take time (and skill) to design and are rarely as good as a custom application. Moreover, a simple mistake could leave you pounds in the red with huge interest and service charges to pay. For most people it is better therefore to leave the fiddly bits to someone who knows what they are doing.

The program is based on a simple Credit/Debit system for a single account. Only one account can be open at any one time. Although this is not as powerful as more expensive commercial applications (which can organise transactions between separate accounts), it is quite sufficient to handle simple management of a single account, such as a personal cheque account.

FINANCIAL HANDLING

Accounts Master tracks each entry by date and type and automatically reads the current date from the system clock (if one is fitted). Entering the current date (or projecting one) is a little strange however. Although the program displays dates in a dd-mm-yy (ASCII) format, entries have to be made in numeric format without separators. Therefore, a date displayed as "03-Feb-93" would be entered "030293." Leading zeros must be supplied. This is far less intuitive than I would have liked and an improvement in this area is certainly needed.



Let Accounts Master sort out your financial life.

Tracking and maintaining the account is a simple matter of filling in a request. Automatic transactions (such as wages or loan repayments) can be filed to occur on a weekly, monthly, quarterly or annual basis. Manual transactions are entered as they occur, an essential but nasty piece of housekeeping. Each one has a date, user-defined transaction code (something to remind you of what it is), the amount and space for a comment. Entries can be made singularly or 'en masse' without leaving the requester. That is a nice touch. On the down side, the error checking leaves something to be desired. While the requester must be filled in correctly, an incorrect entry (such as a bad date) is not flagged by an alert of some type.

Credits and debits, even automatic ones, can be selectively deferred. This area is a little weak since it is not possible to automatically defer an entry for clearance. For instance, most high-street banks require *four* working days to clear a cheque. (It only takes three days: a practice they recently came under fire for from the banking ombudsman.) Building societies, on the other hand, can take anything up to ten days.

Situations such as this one are easy for computers to work out, but devilishly difficult for the average man in the street. Calculating what day a cheque was paid in and on what day it would be effectively credited is a simple matter, even annual bank holidays should not be too difficult to take into consideration. This facility could allow even the lowliest of investors to make the most of 30 day withdrawal, high-interest accounts.

As things stand, the entire account can be reconciled in a single step to show the final projected balance at any particular date. This does not allow for late payments, bounced cheques and so on. However, we should not forget that this is a budget program, not some be all and end all.

GRAPHICS

Accounts Master offers two types of graphical charting and account forecasting which, while simple, are clear to read and easy to use. A 3D vertically ranged bar chart takes all the current transaction types and compares them to the pre-defined budget. Similarly, a classic line chart displays the flow of cash through the account for the period. Compared with the budget average, it looks the part too. It would have been nice (if a little cliched) to have the baseline shown in livid red to highlight where the account dips into, and even beyond, the agreed overdraft. This could help identify possible problems before a nasty letter arrives from the bank.

A low-cost package like *Accounts Master* is not going to rival the likes of *Home Accounts 2*, although it does offer a lot of features to simplify the basics. The most glaring omission is the inability to process more than one file at a time. I understand this is being addressed at the time of writing and may well appear in a future release. This would also suggest that automatic inter-account transfers could also be achieved, so you can keep track of credit and charge cards, as well as savings and investments. Similarly, it would be nice to have the facility to automatically track and debit transaction and interest charges.

Accounts Master is a simple, uncluttered and generally friendly application, perfectly designed for a fiddly job. It does enough to keep simple finances in order without complicating matters and should be quite sufficient for a single person or small family. The best news of all; it comes with a price tag that most certainly won't break the bank. AS

SHOPPING LIST

Accounts Master V3 £6.00
From: MCP Products
6 Malpas Drive
NORTHALLERTON
North Yorkshire DL7 8TU

CHECKOUT
PRODUCT NAME

Features
●●●●●●●○○○
Accounts Master does enough to keep simple finances in order without complicating matters. It offers more or less everything you need, but nothing too flashy or complex.

Documentation
●●●○○○○○○○
A badly photocopied, printed manual. The less said about this the better...

Ease of Use
●●●●●●●●○○
Great for beginners and technophobes, but perhaps too limited for experts.

Value for Money
●●●●●●●●●○
A well designed program for a fiddly job that comes with a price tag that is not going to break the bank. The price is just right for the functions and quality.

Overall rating
●●●●●●●●●○
It is not going to win any awards in the power stakes, yet it is a very effective, budget priced system. It is simple, uncluttered and generally friendly. Recommended.

AMIGA SHOPPER IT'S ON THE DISK

Arexx for all

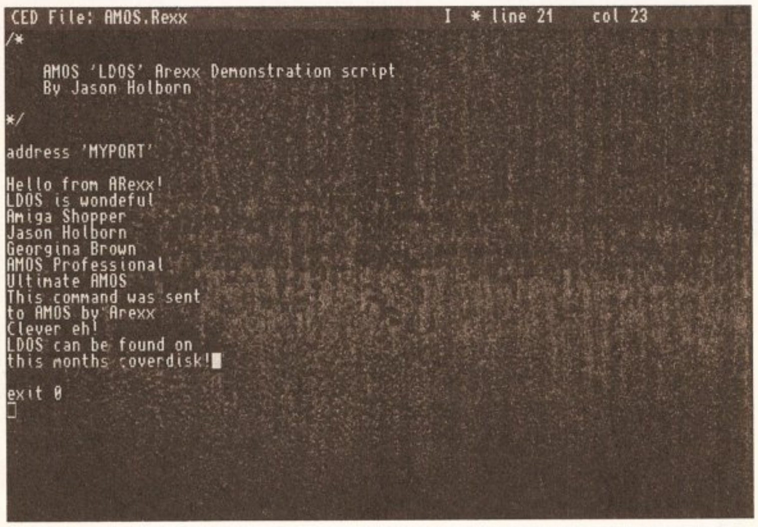
Jason Holborn shows you how to use the AMOS extension LDOS to write ARexx-compatible AMOS programs.

Despite the recent upsurge in popularity for Acid Software's Blitz Basic 2, AMOS still remains the number one choice for most BASIC programmers on the Amiga. It's really no wonder with Public Domain libraries bursting with useful AMOS utilities and source code, and widespread support amongst third party software developers (the recent arrival of Black Legend's 'Craft' extension, for example). With some great books, such as my very own tome 'Ultimate AMOS', dedicated entirely to the language, it's not surprising that AMOS has remained so popular.

One of the greatest strengths of AMOS is its expandability. By simply adding an extension file to AMOS, the AMOS command set can be extended and enhanced immeasurably. Lurking on this month's coverdisk is *LDOS*. It's an extension that adds a whole range of new features to both AMOS Classic (AMOS 1.34 onwards) and AMOS Professional. By now you're probably wondering why I've spent the last minute or so talking about AMOS. After all this is supposed to be an ARexx column? The simple answer is that the AMOS extensionon our coverdisk just happens to give AMOS full ARexx compatibility. Admittedly, ARexx compatibility has been a feature of AMOS Professional ever since its launch, but, as any AMOS Pro user will tell you, it doesn't always work as required. Even Europress readily admits that AMOS Pro's ARexx commands were a bit fudged.

LDOS's ARexx commands, on the other hand, conform very closely to the standards layed down by William S. Hawes for the development of applications that can be controlled via his ARexx language. What this essentially means for the AMOS programmer is that you can write applications in AMOS that can be controlled externally by the other applications (you could even control your AMOS program from within Blitz Basic 2) and from script files run from the Amiga's Shell. Obviously the lack of Intuition support from within AMOS is still something of a limitation.There's no reason, however, why you couldn't use *LDOS's* ARexx commands to code programs that run in the background, a picture file converter, for example.

Built into *LDOS* is a whole subset of commands designed specifically to handle the task of adding ARexx support to AMOS programs. The heart of this system is called ***LRexx*** and it essentially provides a direct link with the routines held in **Rexxhost.library,** a disk-based library which is included with the *LDOS* system. The commands that *LRexx* provides allow the AMOS programmer to set up ARexx ports and run ARexx scripts. *LRexx* will even automatically handle the job of interpreting any commands sent to your AMOS program via its ARexx port. Adding ARexx support to your own programs, using a conventional programming language like C or assembler, is quite a complicated process. *LRexx* helps you by automatically de-allocating replies, leaving you to receive replies via the ARexx port and then respond to them.



LDOS can immediately execute an ARexx script which has been written using a standard text editor. The most important thing for the programmer to note is how the ARexx port still needs to be named using the Address command.

SETTING UP LDOS

Turn to page 8 and you will find out how to de-archive LDOS. You will find complete installation instructions in the program's documentation file, in the docs/ldos directory.

If you are using AMOS Pro, copy the APSystem/ AMOSPro_LDos.lib file into the APSystem directory of your AMOS disk. If you are using AMOS, you must instead copy the LDos.lib file (from the extensions directory) into the directory where you keep all of your AMOS extensions.

You will also need to enter LDos.lib as extension number 10 in your *.ENV file, and to add LDos.lib as number 10 in your compiler configuration. Consult your AMOS manual for details.

Finally, copy rexxhost.library and req.library from the libs directory of the archive to the libs: directory of your system disk.

The symbol ☛ means *do not* type a return – keep typing to the end of the next line. ▼☛ means type a space, *then* keep typing to the end of the next line.

Once you've installed *LDOS* (see the 'Setting up LDOS' box), you are ready to go.

PORT AND LEMON

The first step in coding an ARexx-compatible application is adding to your AMOS program an ARexx *port* that will allow other programs to access your program. *LDOS* makes this very simple thanks to a very handy command called **LRexx Make Host("portname")**. This command is very simple to use. If, for example, you wanted to create an ARexx message port called FRED, all you'd need is the following lines of code:

```
SUCCESS = LRexx Make
Host("FRED"+CHR$(0))
If SUCCESS=0
  Print "Unable to create▼☛
port!"
  End
EndIf
```

There are a couple of things worth mentioning regarding the above lines of code. If you look very closely at the name that we've given our port when the **LRexx Make Host()** command is first called, you'll notice that **CHR$(0)** is appended on to the end of the port name. This is very important, as all messages and portnames must be **null** terminated by appending a **Chr$(0)** character to the end of each string. If you attempt to create a message port or send a message via a message port without null terminating the string, you could crash the Amiga.

It's also worth noting how the **LRexx Make Host()** command returns a value which, in the case of our demonstration listing, is placed into a variable called **SUCCESS**. As any professional programmer will tell you, it's vitally important that you check to make sure that a port has been successfully opened. Although it is unlikely that the port won't be opened, it is still possible. The most common cause of such an error is that you've attempted to create an ARexx message port using the same name as an existing port. You couldn't, for example, create a message port called ADPro when a copy of ASDG's *Art Department Professional* was running. Checking to see whether the port successfully opened is very simple. If the return value is different from zero the port was successfully opened, otherwise something went wrong and your program should proceed no further.

Before we get too bogged down in code, it's worth mentioning that it's equally important that you close an ARexx port once your program has finished running. If you just quit from your AMOS program without closing the message port, very valuable memory can be wasted as the memory allocated to your message port will not be freed. Closing a message port is even easier than opening one. All you need to do is to call the **LRexx Remove Host** command. No parameters whatsoever are required, just add the line to the end of your program and

LDOS will do the rest.

RECEIVING MESSAGES

Now that you've managed to open your ARexx port, you can start using it. If you're writing an application that can be controlled externally, the most important feature that you will need to add is the ability to read messages from your ARexx port. Once again, *LDOS* simplifies this thanks to a command called **LRexx Get Msg(WAIT)**. The best way to understand this command is to see it in the context of a real program.

```
Rem *** LDOS ARexx demonstration
Rem *** By Jason Holborn

Rem *** Open message port...
SUCCESS = Lrexx Make▼☛
Host("MyAMOSPort"+CHR$(0))

Rem *** Has message port▼☛
opened ok?
If SUCCESS=0
  Print "Error: Unable to▼☛
create message port!"
  End
EndIf

Rem ***Read messages from port...
Repeat
  MSG$=Lrexx Get Msg(0)

  Rem *** Is it a valid message?
  if MSG$<>"LRexx0" and MSG$<>""
    Print "Message = ";MSG$

    Rem *** Reply to message...
    Lrexx Reply ""+CHR$(0),0,0
  End If

Until MSG$="LRexx0"

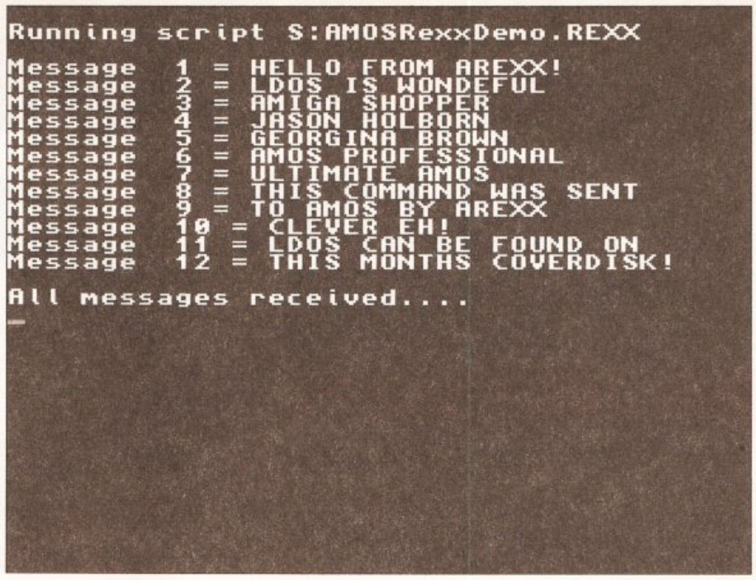
Rem *** Close ARexx message▼☛
port...
Lrexx Remove Host
End
```

The first part of this program is exactly the same as the code we covered above. All it does is to attempt to open an ARexx message port and, if successful, the program continues. The real work, however, is done within a short **Repeat...Until** loop that is performed until the string variable **MSG$** contains the string **LRexx0**. This command can either be sent by the user from the Shell or from another application, or it is automatically sent to your program's message port on completion of a script file. *LDOS* includes a command designed specifically for handling scripts, but more on that later.

Inside the loop, the program first of all attempts to read a message which has been sent to our program's ARexx port. If a message hasn't been sent, the string variable **MSG$** will contain nothing. If it has, it will either contain a command which has been sent to our script or the string **LRexx0**. It's worth noting that the **Lrexx Get Msg()** command does have a single parameter within the set of brackets. This parameter can be one of two values. If you pass a value of zero, the program will continue to loop regardless of whether a command has been sent to our message port. If you pass a value of one, however, the **Lrexx Get Msg()** command will wait until a message is passed before continuing. It is a bit like handling the **IDCMP** messages that **Intuition** programmers have to deal with.

MESSAGE IN A PACKET

With the message read from the message port, the program enters a small **IF...Then** construction which checks to see whether a valid message was received. If either an empty string or the string **LRexx0** was received, this section of code is ignored. If a message was received, the program displays it on the screen. Clearly, if you were writing an application, your program would jump to a routine that handled the task of interpreting that command.



After opening the script file, each line is read from the ARexx port by AMOS.

If you were looking very closely, you may have noticed that a new, not yet covered command, craftily crept into our program: **Lrexx Reply**. This command, not surprisingly, is used to reply to a command sent to our program. Although you may well be wondering why this is necessary, it is very important to let ARexx know that our program has safely received and understood the command that has been sent. If you don't reply to messages, ARexx won't know whether to perform the next line in a script, or send further commands.

The **Lrexx Reply** command accepts three parameters: a return string and two return values. The return string can be anything you like (as long as it is null terminated). It is particularly useful when you're writing a program that can feed information back to the script that is controlling it. Say, for example, you wrote an AMOS program that solved anagrams. You could then use the return string to send the completed anagram back to the ARexx script that was calling it. The two return values allow you to pass return codes back to a script too (a value of minus one if the command was unsuccessful, for example).

Consequently, when the string variable **MSG$** contains **LRexx0**, the program breaks from the loop and then closes our ARexx port and quits. Believe it or not, but you've just written your first ARexx compatible application in AMOS.

NEXT TIME

If all this programming hasn't stimulated your brain cells enough, we will be returning to the subject of LDOS' ARexx commands next time. We will take a more detailed look at how to apply all the intricate theory we have covered in this month's issue to a fully working utility. AS

SENDING MESSAGES

With LDOS installed on your copy of AMOS, you're not just restricted to receiving commands from other applications, you can give them a taste of their own medicine by sending them messages. This is amazingly simple as well thanks to the **Lrexx Send Msg()** command. It has the following format:

```
SUCCESS$ = Lrexx Send▼☛
Msg("PORTNAME","MESSAGE",RESULT)
```

The **PORTNAME** parameter simply tells AMOS and ARexx which ARexx port the command is to be sent to. If, for example, you wanted to send a command to *Art Department Professional*, then the message port name would be 'ADPro'. Once you've told ARexx the name of the port the message is to be sent to, you can send the message itself as a string contained between speech marks: **"Load 'DF0:MyPicture"**, for example. Finally, the **RESULT** parameter simply tells AMOS whether to accept a return code from the application that is sending the message. If you pass a value of zero, the string variable **SUCCESS$** will always be empty.

It is also worth noting the importance of both the message port name and the message you are sending being null terminated by appending **Chr$(0)** to the end of each.

Another command worth a mention is **Lrexx Execute()** which allows you to run an ARexx script controlling your program from within the program itself. This can be very useful when your program is particularly complex. It will allow users to write ARexx **macros,** much along the same lines as Professional Page's 'Genies' that automate operations without having to resort to running an ARexx script from the Shell. All you need to do is to place the filename of the ARexx script that you wish to execute within the closed brackets and AMOS will try its best to run the script. The **Lrexx Execute()** command will return one of two possible values. It's zero if AMOS failed to find or run the script and one if everything went according to plans. It's worth mentioning once again that the filename of the script that you're trying to run must be null terminated.

Once the script has been loaded, it is down to you to read each line into your program, using the **Lrexx Get Msg()** command that we covered earlier. In order to detect when the script has run its course, ARexx will automatically transfer the string **LRexx0** into the string variable that receives the commands. A word of warning: Do not reply to this **EOF** (end of file) signal. If you do, your program is liable to come crashing down around your ears

ACCESSORIES

DATEL ELECTRONICS LIMITED

HIGH RESOLUTION HANDY SCANNER

NOW ONLY £89.99



NOW INCLUDES HANDY SCANNER, INTERFACE, POWER PACK & SCAN EDIT 3.0 SOFTWARE.

FREE PHOTON PAINT

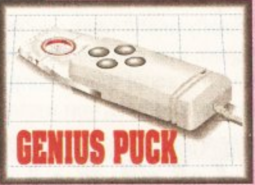
- IFF Buffer Save 1600x1024 pixels, dual buffer, scan matching & view Buffer.
- Unlimited edit/capture facilities &keyboard control not offered by other scanners at this special price.
- Full keyboard control of most functions.
- An easy to handle Scanner featuring 105 mm scanning width & 400 dpi reolution enables you to scan graphics/text into your Amiga 500/500+/600/1200/1500/2000.
- Includes hard disk transfer to run under Workbench.
- Adjustable switches for brightness/contrast levels.
- Full sizing menu of scan area.
- Geniscan gives you the ability to scan images, text or graphics & even offers 200 Dpi Dual Scan Mode.
- NEW Scan Grey Software included to convert half tone images to true greyscales. Includes editing, zoom & proccessing features.
- Screen grid overlay & configure menu to save parameters.
- Icon menu to select functions.
- X,Y position readout & metric sizes.
- Save images in suitable format for most leading packages including PHOTON PAINT, DELUXE PAINT, etc.
- View window and position control panel.
- Powerful partner for DTP that allows for cut & paste editing of images etc.

ADD A PROFESSIONAL TOUCH TO YOUR DRAWING WORK



GENIUS DIGITIZING TABLET

NOW ONLY £129.99



AS AN ALTERNATIVE TO THE STYLUS INPUT THE GENIUS TABLET ALSO HAS AN OPTIONAL FOUR BUTTON PUCK. IDEAL FOR TRACING ETC.

ONLY £29.99

- With the Amiga Genitizer Graphic Tablet you can streamline the operation of most graphic or CAD programs.
- The Genitizer Graphic Tablet utilises latest technology to offer up to 1000 dpi resolution at the tip of a stylus.
- Complete 9"x6" digitizing area plus super accurate stylus combine to enable fast, accurate and easy control.
- Works by "mouse emulation" so the Genitizer will work with most packages where mouse input is the usual method-Deluxe Paint, Photon Paint, CAD Packages, etc.
- Suplied with template for Deluxe Paint.
- Full easy to follow instructions.
- This is the input method used on professional systems-now you can add a new dimension to graphics/cad.
- Fast input of drawing by "tracing" is made easy - plus "absolute reference" means you can move around the screen many times faster than by a mouse.
- The Genitizer fits in the serial port of your Amiga 500/500+/600/1200/1500/2000 and "co-exists" with mouse.
- Unlike a mouse, the tablet gives absolute co-ordinates so that tracking and menu selections are possible from the tablet face.
- A pressure sensitive switch built into the stylus tip activates the Tablet overriding the normal mouse input. When you are not using the Tablet, you have normal mouse control.
- Complete system - Graphics Digitizer Tablet, Stylus, Deluxe Paint Template, Power Ador, Test Software, Interface Unit, plus Driver Program - no more to buy!

ACCESSORIES

MIDI MASTER MIDI INTERFACE £19.99
Best selling Midi Interface for the Amiga. Midi IN, Midi THRU & Midi OUT x3. Complete with 2 FREE Midi Cables.

MIDI CABLES £7.99 (per pair)
1.8 metre long genuine Midi Cables.

LOGIC 3 MOUSE £14.99
Top quality, super smooth replacement mouse. High resolution.

VIRUS PROTECTOR £7.99
Fits in last drive of your system to protect against boot block viruses.

ROM SHARER £24.99
Switch between versions of Kickstart to improve software compatibity. Kickstart 1.3 or Kickstart 2.0 at the flick of a switch for Amiga 500+ owners! No more to buy.

HOW TO ORDER

PHONE

Access VISA SWITCH

0782 744707

24 HOUR MAIL ORDER HOTLINE

FAX

0782 744292

MAIL

Send Cheques, Postal Orders or credit card details to:-

DATEL ELECTRONICS LTD.
GOVAN ROAD,
FENTON INDUSTRIAL ESTATE,
FENTON, STOKE-ON-TRENT,
ST4 2RS, ENGLAND.

OR CALL AT OUR LONDON SHOP:-

DATEL ELECTRONICS
222 TOTTENHAM COURT RD,
LONDON W1
TEL: 071 580 6460

AmiBase 4

The Amiga is not short of databases. Mark Smiddy gives you a quick insight into the workings of them and introduces a new one.

The *AmiBase* database is a typical example of an application that's grown from a simple Shareware effort, passed briefly through Licenceware and finally bloomed as a commercial product, albeit through the self-publishing route. It's been developed using AMOS, which promises a lot, but I want to have a closer look at how much it really delivers.

BEGINNERS START HERE

What use is a database?
A database is an application program used to store information in an easy-to-digest format. Typically they're used to store many **records**, all relating to a single subject. Typical examples include a record collection, telephone directory, cookery book, you name it.

How much information can be stored?
This depends on how the database stores its information. The simpler (cheaper) applications tend to load the entire base into memory. Such designs are limited to the size of individual records and the amount of RAM fitted. More powerful applications use a disk-based filing system and these are usually only limited to the amount of disk space available. An upper limit of 65,000 records is not uncommon and 4 billion is quite feasible.

Not everyone needs this sort of power though. For instance, the entire readership for some computer magazines can be stored in under 50,000 records. Home applications, such as a video database or phone book, are unlikely to grow beyond a few hundred entries.

Do I need a relational database?
This is one question that comes up time after time and if you need to ask, you probably don't. A relational database is an adaptation of the classic **flat-file** database and its primary feature is the ability to cross-reference and process data between two or more files. Generally speaking, you have a single master file and one or more slave files which the master accesses.

The idea is that the slave files contain data that rarely or never changes: prices, addresses, telephone numbers and so on. This permanent data can be accessed many times by the master file and only needs to be stored on disk once. The upshot of all this is a great saving in disk storage space. The down side of it is that the database is considerably more complex to define and a lot more work is involved in setting it up.

What is an index?
Put simply, an index is a sorted list of the records in the database. More accurately, an index is used to determine the order in which the records are displayed and enable a very fast retrieval of any single one.

Records are usually stored on the disk in a natural order, that is in the order they were entered. But look at a telephone directory; it's sorted by surname, the Aardvarks at the start and the Zens at the end. Finding any particular one is easy in this scheme of things, but if entries (records) were not presented like this, finding what you wanted would be a nightmare. (It's surprising how few commercial flat-file databases support indexing. The techniques involved are incredibly simple.) Since the index values are calculated internally, from a field's contents, finding a record is a simple matter of entering a **key** value (a surname, for instance). This value is then used to look up the **natural** record number and display it. Simple!

If a database doesn't support indexes, how can I find records?
This is very dependent on the database. Most will allow you to sort the records in memory or provide some kind of **wildcard** search. Two things comes to light here: Internal sorting is always slow because there's a lot of work involved swapping records; the sort is also only good for the current records. Indexes can be updated automatically (and quickly) every time a new record is added and many can be attached to a single file. Indexing is really the preferred solution and a lack of it is a major shortcoming in any database.

My first impressions of *AmiBase* created mixed feelings. It's a simple memory-based, flat-file system with a limited graphical front end. Strangely enough, although a good complement of menus are supplied, functions such as **Open File** and **New File** cannot be accessed from there. Instead, the new user is left floundering with a row of **Intelicons**, a catchy name for some badly designed icons ranged across the top of the screen. The real problem with these is size; they're simply too small for short-sighted journos like me and totally hopeless on a domestic television.

Similarly, when the program is first started, it asks how many fields are going to be used. This is clearly a memory allocation feature that the user should not have to bother with. One Vision suggest that with six fields, a total of 10,000 records should be possible. With the maximum limit of 20 fields this is reduced to just 2,000. Objectively speaking, this should be sufficient for most home users, but I wonder how realistic this limit is, given the peculiarities of BASIC.

AmiBase splits the file definition (three field types are supported) and database engine between two programs. Quite why this has been done is not clear, but it works for some people. Once the definition has been supplied, it is saved to a single disk. It only supports a single file for each disk.

Entering data (a lousy job at the best of times) is quite simple, but you have to enter **STOP** in the first field definition to return to view mode. Once done the file can be saved, sorted and manipulated in a number of ways, none of which are particularly new or outstanding. The addition of mathematics mode is a nice thought, but the limited numeric fields hardly warrant it.

CONCLUSION

Once again, the AMOS limitations rear up and bite me like some plague dog in a country park. Giving an inexperienced BASIC programmer a tool like AMOS Professional is like holding target practice in a greenhouse. Although I have seen many worthy efforts, and *AmiBase* is one, nothing really shines. A classic example from many BASIC manuals shows a database formed using a memory array. Not surprisingly, a lot of database applications get developed using exactly that principle.

Those ideas date back to the days when micros used cassette tape and should have been put out to pasture long ago, along with the in-memory bubble sorts and the rest of them. Although the programmers must share some of the blame, people teaching them these outmoded principles must get up to speed. Unless this occurs, low-cost, professional quality software is going to die with its boots on. *AmiBase* is a reasonable attempt, but the engine is weak and that's what counts at the end of the day. AS

SHOPPING LIST

AmiBase 4 costs £15
From: One Vision Software, 15 Laurel Drive, Tilehurst, Reading, Berkshire RG3 5DY

CHECKOUT PRODUCT NAME

Power
●●●○○○○○○○
Not very powerful. The memory-based system is sadly limited to a few thousand records.

Functions
●●●●●○○○○○
Another limitation of *AmiBase* is the fact that the functions are restricted to search and simple reporting.

Documentation
●●●●●●○○○○
There's a lot of it, but it's supplied on disk, no printed manual.

Ease of Use
●●●●●●○○○○
It is easy to get started and very simple to maintain.

Value for Money
●●●●○○○○○○
For this money I'd expect at least a printed manual.

Overall rating
●●●●●●○○○○
A typical example of an application that's grown from a simple shareware effort. It's no doubt promising, but it has a long way to go.

It's playback time!

AMIGA SHOPPER IT'S ON THE DISK

Midi File Player

Follow another Amiga Shopper first, as Paul Overaa releases the source code and program design details for what may be the only Freely Distributable Amiga Midi File Player in existence...

Midi file player programs have always been rather thin on the ground in the PD world. I'm not sure why, but it might have something to do with the fact that such programs not only have to interpret (parse) a fairly complicated file structure, but, equally important, they have to do it quickly. This is needed because a lot of the information extracted from the file has to be delivered to the Amiga's serial port with pin-point timing accuracy. This month I thought I'd do my bit to generate some interest in this area by looking in detail at how I programmed such a utility.

Midi files, in case you don't know, have been around for quite a time and their original use was to provide Midi sequence portability. Songs created using one sequencer program can, if stored in Midi file format, be read (and therefore edited) by other sequencers. Midi files then provide the same sort of portability benefits for the musician as IFF picture files do for the artist.

At this stage you might be wondering why conventional sequencers aren't suitable as Midi file players. It's because Midi sequencer packages are designed primarily for the creation and editing of Midi sequences. Whilst they offer playback facilities as part and parcel of this process, they use their own (proprietary) data formats internally and are therefore not usually geared up for direct playback of Midi files.

This lack of direct Midi file playing support can be a pain. Suppose, for example, you have a library of sequences and songs which, for reasons of portability, you keep in Midi file form. To listen to any of the data, you'd have to load a sequencer and then import the sequence or song before you could play it. When you've got hundreds of songs or sequences, these import operations can take a lot of time. Alternatively, ask any musician who uses a Midi sequencer on live gigs and he will also confirm that sequencers in general are not geared for ease-of-use as playback devices. They have too many controls and are nowadays large, 'memory hungry' programs (memory that with a smaller program could be used for storing RAM-based, and therefore rapidly accessed, sequences). What's needed in these, and many other, 'playback only' situations is some sort of small utility that can handle Midi files directly. I was never able to find one and so, to cut a long story short, I wrote my own.

It should be obvious that the key to writing any file processing utility is to understand, in detail, the relevant file format. This means, of course, that you will need to know a little about Midi files in order to appreciate this month's example code. So here it is in a nutshell.

DELTA TIME FIELDS

1st Byte	2nd Byte....	n'th Byte
1xxx xxxx	1xxx xxxx...	0xxx xxxx

↑ (1st and 2nd bytes) shows that more bytes are to follow

↑ (n'th byte) shows that this is the last byte of the number

OVERVIEW OF THE STANDARD MIDI FILE STRUCTURE

At the highest level, Midi files consist of blocks of data called **chunks**. Each chunk consists of a 4 byte identifier, followed by a 32-bit number which provides the byte-length of the data held in the chunk. At the time of writing, only two types of chunks are defined: **Header chunks** which have a **MThd** identifier, and **track chunks** which have a **MTrk** identifier. The idea of files consisting of identifiable chunks which may be used or skipped, is of course similar to that used by Electronic Art's IFF format. There are however two important differences: First, the Midi file arrangement doesn't support the idea of nested chunks. Second, Midi file chunks are not padded to an even number of bytes as is the case with IFF files.

Midi file chunks can be arranged in three ways and this leads to three types of files:

Type 0 files contain a header chunk followed by a single track chunk. This is the most portable of all Midi file arrangements and is used for storing a sequence or song as a single stream of events.

Type 1 files have a different use – they allow multiple simultaneous track sequences to be stored. Type 1 files contain a header chunk followed by a number of separate track chunks intended to represent tracks to be played simultaneously.

Type 2 files are different again because they've been developed to allow sets of independent sequences to be stored. A sequencer might save the individual sequences (intro, verse, bridge etc.) which make up a complete song as a single format 2 type file. For a Midi file player program, the most convenient format is the type 0 arrangement.

MThd header chunks are always the first chunk in a MIDI file and, like all Midi file chunks, they start with the identifier followed by a 32-bit chunk size value. Header chunks currently have six bytes of data. The first word gives the file format or type (0, 1, or 2), the second tells you how many track chunks there are present in the file, and the last 2 bytes contains the all important timing/division information.

TWO IMPORTANT META EVENTS

Description	Type (Hex)	Length	Details
End Of Track	2F	0	This event MUST be used so that an exact ending point can be specified for a track. It's use is non-optional!
Set Tempo	51	3	A 24 bit number which represents microseconds per quarter note. These events should ideally only occur at positions where real Midi clocks could be located.

The chunk contents therefore take this form:

```
4 Bytes      MThd identifier
4 Bytes      Size in bytes of
             following data
             (currently 6)
2 Bytes      Midi file type (0,
             1 or 2)
2 Bytes      Number of Track
             Chunks (will be 1
             for file type 0)
2 Bytes      Division
             information
```

The **division** field's contents and format may vary, but if bit 15 (the most significant bit) is zero, then bits 14-0 give a 15 bit number which specifies how many delta-time ticks make up a crotchet. This information is used to adjust the overall event playback speed.

Track chunks start with a 4 byte **identifier**, **MTrk**, and a 32 bit **length field** showing how many bytes the chunk contains. The data events themselves follow that. They all start with a field that specifies the amount of time which should pass before the specified event occurs (this is the so called **delta time**). Track chunk events can be one of three types: **Midi Events** (which are defined as being any Midi channel message), **Sysex Events** (which in a Midi file can be represented in two different ways), and a collection of non-Midi events known as **Meta Events**.

Midi Events are obviously going to be of interest to the player program and I'll deal with the issues related to these events later. I'm not going to deal with **Sysex Events** in any great detail because most musicians do not include them in their Midi files. However, because these events have to be properly skipped over, we do need to know how to both identify them and measure their size. Here are the general Sysex event formats:

```
Sysex event 1: <delta-time> <F0>
<byte-count> <sysex-data-bytes>

Sysex event 2: <delta-time> <F7>
<byte-count> <sysex-data-bytes>
```

Only two **Meta Events** will directly concern us, although general format details again are needed in order to properly skip over any unused events as they are encountered, ensuring that we will deal with the ones that are significant to us.

Meta events take this general format:

```
Meta Event <delta time> <FF hex>
<meta-event type> <length> <data
bytes>
```

In other words, all of them start with an FF hex Meta event identifier, followed by a **type** field, a byte count, and the data itself. The type field is a 1 byte value between 0 and 127 and the length field is stored in the same variable length format as is used for delta-time values. The two Meta events of interest are those that allow the end of a track, or a change in tempo, to be recognised (see boxout). A whole collection of other Meta events have been defined and many are used for embedding text material (eg sequence or track names, lyrics and copyright notices).

FIGURE 1

THE WARNIER DESCRIPTION

Part of the Warnier description of the high-level chunk reader.

```
[ COLLECT SOURCE FILENAME
[ (1 time)
[ COLLECT DEST FILENAME
[ (1 time)
[ ATTEMPT TO OPEN SOURCE
[ (1 time)
[ ____________
[ SOURCE OPEN    [ source file cannot be opened
[ (0,1 time)     [
[
[                [ READ HEADER CHUNK IDENTIFIER
[                [ (1 time)
[      +         [
[                [ __________
[                [ VALID FILE  [ specified source is not a Midifile
[                [ (0,1 time)  [
[                [
[ SOURCE FILE    [
[ (0,1 time)     [
[                [             [ READ CHUNKSIZE
[                [             [ (1 time)
[                [             [
[                [             [ READ TYPE
[                [             [ (1 time)
[                [   +         [
[                [             [ READ TRACKCOUNT
[                [             [ (1 time)
[                [             [
[                [             [ READ DIVISION
[                [             [ (1 time)
[                [             [
[                [             [ DISCARD(CHUNKSIZE-6) UNRECOGNIZED BYTES
[                [             [ (1 time)
[                [             [
[                [             [ ATTEMPT TO OPEN DEST
[                [             [ (1 time)
[                [             [
[                [ VALID FILE  [
[                [ (0,1 time)  [
[                [             [ __________
[                [             [ OPEN DEST    [ destination file cannot be opened
[                [             [ (0,1 time)   [
[                [             [ +
[                [             [              [                  [ READ CHUNK IDENTIFIER
[                [             [              [                  [ (1 time)
[                [             [              [                  [
[                [             [ OPEN DEST    [ EXAMINE CHUNK    [
[                [             [ (0,1 time)   [ (1, n times)     [
[                [             [              [                  [ ___________
[                [             [              [                  [ TRACK CHUNK   [ Discard Chunk
[                [             [              [                  [ (0,1 time)    [
[                [             [              [                  [ +
[                [             [              [                  [ TRACK CHUNK   [ Analyse Chunk
[                [             [              [                  [ (0,1 time)    [
```

DELTA TIMES

Delta time fields are an integral part of the syntax of all Midi file events. Like a number of other Midi file items, their values are stored in a variable length format containing 7 real bits per byte. The most significant bit (bit 7) is used to indicate either the continuation, or the end, of the number (see boxout on page 76).

You may be wondering why Midi files do not use say a simple fixed 4 byte event time field. The reason has to do with efficiency. With the variable length approach inter-event times which are less than 128 (the majority of the time values) can be stored using just a single byte. The number 126, for example, can be stored simply as binary 0111 1110. Once we get above 127, that is 0111 1111, more bytes will be needed to store the number.

That then is the basis of the Midi file standard. It's worth mentioning that running status (the use of implied status bytes) is allowed within a stream of Midi events, but it must not be carried across non-channel events. If a stream of running status Midi messages are interrupted by one or more Meta or Sysex events, then a new status byte must be present in the first of any Midi messages which follow.

A MATTER OF DESIGN

The initial program development stages, as might be expected, revolved around the use of a collection of techniques whose aim was to map out in detail the overall structure of the program. I used Warnier diagramming techniques for the initial program design, but there are plenty of other techniques available that could have been used. In general, the two most important points to make are: First, you should

continued on page 80

GASTEINER

126 Fore Street, Upper Edmonton, London N18 2AX
Tel: 081-345 6000 Fax: 081-345 6868

RAM

A4000 (32 BIT RAM)

1MB £49.95
2MB £69.95
4MB £149.95

A1200 Ram with clock upgradeable FAST RAM board to 1, 2, 4 or 8mb with optional floating point unit

1MB no fpu £89
2MB no fpu £115
4MB no fpu £179
8MB no fpu £359

SPU for above (also for A4000)

20MHZ £35
33MHZ £79
40MHZ £114
50MHZ £154

A600 RAM

1MB no clock £23.95
1MB with clock £39.95

A500 RAM

1/2MB no clock £14.95
1/2MB with clock £24.95

A500+RAM

A500+ 1MB £23.95

Simms RAM for GVP Hardrives

1MB 32 bit £29.95
4MB 32 bit 149.95

Simms RAM for GVP (A1230)

1MB 64 pin £49.95
4MB 64 pin £179.95

PCMCIA CARDS

2MB £109
4MB £169

HARD DRIVES

Amiga A500 + A500plus

IDE controller for A500 and A500+ with 8MB RAM option for standard 2.5" or 3.5" P.C. compatible hard drives

Controller only £89
65MB with controller £209
85MB with controller £249
120MB with controller £279
200MB with controller £299
250MB with controller £319
340MB with controller £339
420MB with controller £369
540MB with controller £399

ALFADATA PRODUCT

Hard drive for A1500, A2000, A3000 and A4000 (Spec as above)

Controller only £89
65MB with controller £209
85MB with controller £249
120MB with controller £279
200MB with controller £299
250MB with controller £319
340MB with controller £339
420MB with controller £369
540MB with controller £399

New Oktagon 4008 SCSI-2 controller with up to 8MB upgradeable for A1500, A2000, A3000+ now A4000

Controller only £99
170MB with controller £299
340Mb £349
540MB £549
1.2 G-Byte £899
2.0 G-Byte £1599
4.0 G-Byte £2499

COMPUTERS

Amiga A4000/040 + Hard drive

85MB 2+4RAM £1895
120MB 2+4RAM £1919
200MB 2+4RAM £1939
250MB 2+4RAM £1979
340MB 2+4RAM £2069
420MB 2+4RAM £2149
540MB 2+4RAM £2299

Amiga A4000/030+ Hard drive

85MB 1+1RAM £899
130MB 1+1RAM £969
200MB 1+1RAM £999
250MB 1+1RAM £1039
340MB 1+1RAM £1099
426MB 1+1RAM £1199
540MB 1+1RAM £1299

Amiga A1200 computers

A1200 ....£285
A1200 + 40MB £385
A1200 + 65MB £440
A1200 + 85MB £465
A1200 + 127MB £490
A1200 + 209MB £540

Desktop Dynamite pack for above please add £40

Amiga CD32 Console CD32 with four games £289

MONITORS

Commodore 1942 ....£339
Commodore 1940 ....£289
Commodore 1085 ....£199
Microvitec Multisync £389
SVGA Monitor £199

PRINTERS

Hewlett packard

HP 310 ....£239
HP 510 ....£260
HP 500 Colour £299
HP 550 Colour £479
HP 1200 Colour £1399
HP 4 Laser printer £599

Citizen

Swift 90 colour £159
Swift 200 colour £200
Swift 240 colour £249
ProJet II £250

Seikosha

SP 1900 ....£124.99
SP 2400 ....£154
SL 90 ....£154
SL 95 ....£295

Star

LC 20 ....£129
LC 100 colour £149
LC 200 ....£199
LC 24-30 colour £229
LC 24-300 ....£299
SJ 48 BubbleJet £205

Fargo

Primera printer £819

LISTING 1

The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

Part of the associated chunk reader code for the player program

```
UBYTE OpenSourceOK(FILE *source_p, TEXT▼☛
*dest_name_p)

{

variable declarations - see disk form for▼☛
details

identifier=Read4BytesFromChunk(source_p);

if(identifier!=ID_HEADER)▼☛
error_number=BAD_HEADER;

 else {

 chunksize=Read4BytesFromChunk(source_p);

 type=fgetc(source_p);▼☛
type=(type<<8)+fgetc(source_p);
 trackcount=fgetc(source_p);▼☛
trackcount=(trackcount<<8)+fgetc(source_p);
 g_division=fgetc(source_p);▼☛
g_division=(g_division<<8)+fgetc(source_p);
 g_microsecs=g_tempo/g_division;

 bytes_to_discard=chunksize-3*sizeof(UWORD);

error_number=DiscardBytes(bytes_to_discard,☛
source_p);
 if(error_number==NO_ERROR)

 {
 if (!(dest_p=fopen(dest_name_p,"wb")))▼☛
error_number=NO_DEST;

 else
 {

 for (i=0;i<trackcount;i++)
 {
 error_number=ExamineChunk(source_p,▼☛
dest_p, dest_name_p);

 if(error_number!=NO_ERROR) i=trackcount;▼☛
/* force exit */
 } /* end of loop processing */
 fclose(dest_p);

 } /* end of successful▼☛
fopen(dest_name_p,"wb") processing */

 } /* end of if(error_number==NO_ERROR)▼☛
processing */

 } /* end of (identifier==ID_HEADER)▼☛
processing */

fclose(source_p);
return(error_number);

}
```

continued from page 77

use a systematic design approach. Second, you should feel comfortable with the techniques you adopt.

Having studied the Midi file standard in detail the logical structure of the standard was mapped out, giving me a clear picture of the formats of the allowable data items. There is always a very strong connection between the file structure and final program structure in these type of file parsing programs. In fact, the descriptions of many of the player program routines were created directly from my Midi file structure diagrams.

I found it convenient to split the development into two parts, first producing a (high-level) **chunk reader** whose job was to identify individual Midi file track chunks. Don't get fooled into thinking that these early design stages are just a matter of sketching a program structure and getting stuck into the coding. It's really more an **iterative cycle** that involves you thinking about what you're doing, perhaps changing some ideas in light of further thought, modifying the design and so on. For example, as the development proceeded, one question that arose with the high-level chunk reader was how to check that any supplied filename actually constituted a Midi file. In this instance the standard gave the necessary clues: The program must read the header chunk and see if the **MThd** identifier is present. Only if a valid header chunk is found must the program attempt to read the header items described in the standard.

Other thoughts involved the incorporation of a dummy 'destination file' for receiving output data. Although not needed for the player program itself I knew that this file output hook would prove valuable in a number of related Midi file applications. Another extra was a multiple track playing loop which enabled successive tracks from type 1 or type 2 Midi files to be examined. This again was unnecessary for the type 0 file player program itself, but the addition would make it easier to re-use the code in other applications.

Since I thought that it might, on occasion, be useful to be able to sequentially play all tracks associated with type 1 or type 2 files, I have not forced the program to stop with an error if you attempt to play one of these files (but needless to say you will only hear one track chunk at a time).

With my planning approaches, all of this type of detail eventually gets embedded into the program design diagrams. (See the boxout on page 77) Note that I've allowed for the fact that, at some later stage in the development of the Midi standard, some new (and therefore unrecognised) fields might be added to the header. What does the final code look like? Listing 1 (above) shows the code that was developed from the **VALID FILE** area of the Warnier diagram.

CHUNK ANALYSIS

The high-level reader just described, will happily skim through a Midi file on a chunk by chunk basis. The next stage involved the creation of a (low-level) chunk analyser whose job was to perform the detailed track chunk examination. A lot of preliminary planning was carried out and the resulting design diagrams used to produce the final code. The chunk analyser routine has to be involved with the detailed structure of possible events present in a Midi file. We know from the Midi file standard that every event has an associated delta time value and that events are either **Sysex**, **Meta** or **Midi** events. The overall formats of Sysex and Meta events are reasonably simple and have already been discussed. Midi events, the disk file equivalent of a Midi message, are a little more complicated because there are seven separate classes.

A channel MIDI message consists of a status byte (bit 7 set high), followed by either one or two

LISTING 2

Skeleton form of the program section that identifies event classes.

```
UBYTE AnalyseChunk(FILE▼☛
*source_p, FILE *dest_p)

{

do {

 delta_time=ReadVarLen☛
(source_p);

 if(delta_time)

    {

    real_delay=delta_time*☛
g_microsecs;

    g_timer_request_p-☛
>tr_time.tv_secs=real_delay☛
/1000000;

    g_timer_request_p-☛
>tr_time.tv_micro=real_delay☛
%1000000;

    DoIO((struct IORequest▼☛
*)g_timer_request_p);

    }

 current_byte=fgetc☛
(source_p); /* read▼☛
first byte of this event */

 switch(current_byte)

  {

  case SYSEX_EVENT1:
straightforward code - see disk
version for details

  case SYSEX_EVENT2: ditto

  case META_EVENT: ditto

  default:

         pass item to▼☛
         MidiHandler()
         - see disk
         version for
         details

         break;

  }

 }while(!(exit_flag|g_break☛
_flag));

return(error_number);

}
```

LISTING 3

The switch section code that builds the Midi messages

```
switch(current_status)

{

case NOTE_OFF:            g_midi_message[2]=fgetc(source_p);
                          TransmitMessage(NOTE_OFF_SIZE);
                          break;

case NOTE_ON:             g_midi_message[2]=fgetc(source_p);
                          TransmitMessage(NOTE_ON_SIZE);
                          break;

case POLYPHONIC_AT:       g_midi_message[2]=fgetc(source_p);
                          TransmitMessage(POLYPHONIC_AT_SIZE);
                          break;

case CONTROL_CHANGE:      g_midi_message[2]=fgetc(source_p);
                          TransmitMessage(CONTROL_CHANGE_SIZE);
                          break;

case PROGRAM_CHANGE:      TransmitMessage(PROGRAM_CHANGE_SIZE);
                          break;

case CHANNEL_PRESSURE:    TransmitMessage(CHANNEL_PRESSURE_SIZE);
                          break;


case PITCHBEND:           g_midi_message[2]=fgetc(source_p);
                          TransmitMessage(PITCHBEND_SIZE);
                          break;


default: current_status=BAD_CHUNK_DATA; break;

}
```

trailing data bytes whose values can only be between 0 and 0x7F. The status byte itself need not be sent if the previous message had the same status byte (this is called running status and it is used to avoid unnecessary status byte duplication). The status bytes have a MIDI channel number (shown as n) embedded in the lower four bytes and this 0x0-0xF value corresponds to MIDI channels 1-16.

Channel message types and sizes are shown below:

```
NOTE_OFF 0x8n NOTE_OFF_SIZE 2

NOTE_ON 0x9n NOTE_ON_SIZE 2

POLYPHONIC_AT 0xAn
POLYPHONIC_AT_SIZE 2

CONTROL_CHANGE 0xBn
CONTROL_CHANGE_SIZE 2

PROGRAM_CHANGE 0xCn
PROGRAM_CHANGE_SIZE 1

CHANNEL_PRESSURE 0xDn
CHANNEL_PRESSURE_SIZE 1

PITCHBEND 0xEn PITCHBEND_SIZE 2
```

The bottom line here is that, having read the delta time value and executed an appropriate delay (I've used standard timer device functions for this), we must identify the event type. In the final code Sysex and Meta event classifications are handled by a switch statement. All other bytes, which should be either Midi status bytes or Midi data bytes, are dealt with by a **MidiHandler()** routine that checks/sets any status changes using a switch statement to identify the various message categories. Listing 2 shows a skeleton version of the routine which handles the event identification.

Midi messages vary in size and, in order to transmit the right number of bytes, it's necessary to distinguish between the various classes. This again is easily handled in C by using a switch statement and listing 3 should give you the general idea. Transmission of each message is achieved by the serial device oriented **TransmitMessage()** function shown in listing 4.

GENERAL CODE LAYOUT

The source for the program has been placed on disk in a single file called **MidiPlayer.c**. After the **includes**, **defines**, **prototypes** and **global variable** sections, you'll find the main Midi file opening and parsing routines. After this come a selection of support routines and a series of resource allocation and de-allocation functions which set up the serial and timer devices. I used the dynamic ADT stack based technique discussed in issue 32. This means

LISTING 4

Serial request code for sending a Midi Message

```
void TransmitMessage(ULONG size)

{

g_serial_request_p->IOSer.io_Data=(APTR)g_midi_message;

g_serial_request_p->IOSer.io_Length=size;

g_serial_request_p->IOSer.io_Command=CMD_WRITE;

DoIO((struct IORequest *)g_serial_request_p);

}
```

incidentally that the compiled program has to be linked with my **stack_ADT.o** object code module. Most of the support routines, such as the short function in listing 5 which is used to skip unwanted events, are relatively simple and hopefully should not prove too difficult to understand.

During development I frequently include **printf()** tracer statements for testing and debugging purposes. Some of these have been left in the program to provide some 'visual feedback' about what the program does as it runs (see the resource allocation/deallocation and tempo change routines for example cases).

You'll notice from the source code on disk that a **ctrl-C** break handler has been provided. This is to enable the program to be stopped during the time that a Midi file is playing. The general difficulty here is that if the program just terminated normally, Midi notes could be left *hanging*, ie playing. The solution to this problem is to transmit **All Notes Off** messages on all channels, but unfortunately not all synthesizer units respond to these. Instead, I've sent real **Note Off** Midi messages for all notes on all channels, using a small time delay between the messages of each channel to prevent 'buffer overflow' problems on any, less capable, Midi units.

LAST WORDS

You will find full and intricate details of how to use the Midiplayer program in the docs file supplied on this month's cover disk. Basically it is just a matter of opening a Shell window and type the name of the program, followed by the name of the **TYPE 0** Midi file you wish to play. The program will then pull out and transmit the Midi messages from the file via the Amiga's serial port – needless to say perhaps, you'll need your Midi interface and Midi gear connected up, as per usual, in order to hear anything.

So why not get yourself plugged in, go ahead and enjoy yourself tremendously? Remember that Midi is compatible across a whole range of different instruments, so there really should be no end of things you can connect in and power up with the Midi file player. AS

LISTING 5

The generalised routine used to skip over unwanted file events

```
UBYTE DiscardBytes(ULONG count, FILE *source_p)

{

UBYTE error_number=NO_ERROR;

while(count--)

  {

  if (fgetc(source_p)==EOF) {error_number=BAD_CHUNK_DATA; ▼☛
count=0;} /* force exit */

  }

return(error_number);

}
```

IT'S ON THE DISK

AMOS action

Jason Holborn explains how to view your AS Paint creations in an almost embarrassing level of detail.

Welcome back to another exciting installment of *AMOS Action*. Apart from a few very simple routines that you can no doubt add yourself, *AS Paint* is nearing completion. With the addition of next month's code which will allow you to load and save *AS Paint* pictures, our nine month journey into the intricacies of programming an AMOS paint program will be drawing to a close.

With *AS Paint* safely put to bed, we'll be moving on to another AMOS programming project. The question is: What is it to be? If you have any good ideas, put pen to paper and let us know. If there's enough call for a particular type of program, then rest assured that it will be covered within these pages. Why not help us to mould *AMOS Action* into the column you want to read

AS PAINT IN CLOSE UP

This month's *AS Paint* code adds what is undoubtedly one of the most important functions that any paint program has to offer,a **Magnify** function. A magnifying tool gives you the ability to edit an image with a much greater level of detail and can be particularly important when you're using a program like *AS Paint* to design sprites and bobs for an AMOS game. Such images are usually very small, but packed with detail. It would be rather impossible to design them using the standard 1:1 image display without putting a considerable amount of strain on your trusty minced pies.

Coding a magnifying function like those found in *Brilliance* and *DPaint* would be rather code intensive, so I will go for a simpler form of the same tool. Unlike *DPaint, AS Paint's* **Magnify** tool doesn't allow you to use all the standard painting functions on the magnified view. You're restricted to a simple freehand draw mode that allows you to draw dots in any of the available colours into the magnified view. This is the only limitation that I've imposed. Just like *DPaint*, you can still select which area is to be magnified, adjust the **zoom** level and move around the bitmap using the cursor keys.

Type in the code for this month and you're ready to experiment with the **Magnify** function. All you have to do is to click on the **Magnify** gadget from the *AS Paint* toolbar (looks like a magnifying glass) and a rectangle will be displayed below the mouse pointer on the **canvas** screen at once. Move this rectangle over the section of your image that you'd like to zoom in on and then press the left mouse button. A new **Magnify** screen will be displayed containing a magnified view of the rectangular area you selected. Select any of the available colours, using the colour selection slide bar, and draw into the magnified view by pointing and clicking with the left mouse button.

Next to the colour selector there are two gadgets that allow you to adjust the zoom level: plus and minus. *AS Paint* offers four levels of zoom, ranging from very large 16x16 pixels to a more manageable 2x2 pixel. You can still use the freehand drawing function in any one of these four zoom modes. You can move around the bitmap by pressing one of the four cursor keys. The **Up** arrow key scrolls the display up, the **Down** arrow scrolls it down and so on.



AS Paint's new Magnify mode offers four levels of magnification so you can really zoom in on Cindy Crawford's ample charms.

COMPLETE BREAKDOWN

Let's get stuck into this month's code. You'll be pleased to know that the complete listing for *AS Paint* is on this month's coverdisk. Here's a complete breakdown of how it works:

1. The procedure **_MAGNIFY** forms the heart of *AS Paint's* magnify function. Within this procedure is virtually all the code required to display the magnified view, handle the cursor keys and the adjustment of the magnification level.

2. Before diving into the main code, three variables are defined: **SFACT**, **QUIT** and **CLR**. **SFACT** is possibly the most important as it holds a value between 2 and 16 which dictates the magnification level. Four levels are available: 2x2, 4x4, 8x8 and 16x16. **QUIT** is simply a flag variable that enables the main loop within the **_MAGNIFY** function to be broken when the user clicks on the **CLOSE** gadget. Finally, the **CLR** variable holds the number of the current colour.

3. The first thing the routine does, is to establish which part of the drawing area is to be displayed in the magnified view.

4. This aspect of the routine works in a very similar way to the code we used for many of the drawing functions. The heart of the routine is a simple: 'Repeat...Until' loop. That is continuously performed until the user presses the left mouse button (effectively telling the program that an area has been selected).

5. Since the zoom area is represented as a box that is tied to the position of the mouse pointer, the first thing we do is to get the coordinates of the mouse pointer and subsequently convert them to 'screen' coordinates.

6. Once each set of coordinates has been read, the box is drawn on to the screen using AMOS' **inverse** drawing mode. Drawing the box a second time, will effectively remove it from the screen.

7. In order to keep the zoom area within the boundaries of the current screen, the procedure needs to be informed about how large the drawing screen is. This is achieved using the AMOS **Screen Height** and **Screen Width** commands.

8. Once we know how large the drawing screen is, the routine checks to make sure that the area to be magnified is within the boundaries of the drawing screen. Both the right 'X' and bottom 'Y' coordinates have to be checked. Because the magnifying mode can display a maximum of eighty pixels across and 60 pixels down, the maximum 'X' and 'Y' values are calculated according to the current magnification level (set to 4x4 by default).

9. Once the 'X' coordinate has been checked, the 'Y' coordinate is checked using the same technique. If all went according to plans, we will have a legal set of coordinates that will not crash the Amiga.

10. Now that we have a legal set of coordinates, we can start to draw the screens for **Magnify.** Two screens are required, one for the magnified view and another **tools** screen which will hold all the gadgets required to handle the magnify function. The first screen to be opened is the magnified view which is a 320x240 screen. Once the screen is opened, its palette is grabbed from the main drawing screen.

11. Once the **Magnify** screen is opened up, the toolbox screen is opened and then repositioned below the first screen immediately. It uses a standard palette, which is actually the same as the *Palette Editor* we covered last month.

12. We need to create four gadgets

AMOS ON THE MOVE

It's itchy feet time again in *AMOS Action*. Len and Anne Tucker, those very nice people that not only handle the *AMOS PD library*, but also happen to be the brains behind the brilliant *Totally AMOS* disk magazine, have moved to a new address. From now on, both the *AMOS PD Library* and *Totally AMOS* can be reached at:
17 Wick Farm Road, St.Lawrence Bay, Southminster, Essex CM0 7PF. Jokes about Essex girls will not be appreciated

on the toolbox screen and so four screen zones are initialised using the AMOS **Reserve Zone** command.

13. With the zones defined, we can start to draw them into the toolbox screen. The first gadget to be defined is the colour selector which will allow the user to select which colour, from those available, they wish to draw into the magnified view with.

14. The currently selected colour is displayed in a small gadget directly right of the colour selector. This isn't a true gadget, however, it simply displays which colour is currently selected. It's drawn up using a combination of the **Box**, **Bar** and **Line** commands and the RGB value of the current colour is then copied into the toolbar screen.

15. We need two gadgets that will allow the user to either increase or decrease the magnification level. The first gadget we define is the + (plus) gadget. It is fairly obvious that it increases the magnification level so that the pixels appear larger. Once the gadget has been drawn, it is defined as a screen zone.

16. The second magnification gadget (-) is then defined using exactly the same technique.

17. Finally we need a **Close** gadget which will allow the user to turn off magnification and return to the main program. Once again, the gadget is defined as a screen zone.

18. Now for the really exciting bit; the drawing up of the magnified view. This is automatically handled using a very versatile routine called **_REFRESHZOOM** which we shall cover later on.

19. With the screen display now set up, the main loop begins. This loop is performed continuously until the **Close** gadget is selected.

20. During a single execution of this loop, every single gadget is checked once. The first gadget to be handled within the loop is the *colour selector*.

21. In order to detect user interaction with the *colour selector*, the program checks to make sure that the mouse pointer is over the *colour selector* and that the user has clicked the left mouse button.

22. If both of these conditions are true, the program calculates where within the boundaries of the *colour selector* the mouse pointer is. This code is almost identical to the slider gadgets we used in the *Palette Editor* in last month's issue.

23. This calculation can often return a value that is larger than the maximum value, so we check to make sure that this has not happened. If it has, the value is **XSEL** decreased by one.

24. Now that we know which colour has been selected, the slider gadget is redrawn so that the **handle** (the bit you slide back and forth) is redrawn at its new position.

25. The current colour is then changed to reflect the newly selected colour. Once this is done, the new colour is transferred from the **PALTTE()** array into the toolbox screen so that the gadget which displays the current colour is updated. It isn't actually redrawn, all we do is to change the RGB value of colour five on the toolbox screen (colour 5 was previously used to draw the gadget imagery and will therefore automatically reflect the new colour setting).

26. Well, that's the *colour selector* dealt with. Now we move on to the quit gadget. This is a very simple section of code. If the user clicks on the **Close** gadget, a value of one is stored in the **QUIT** variable.

AS PAINT CHANGES

In order for this month's juicy AMOS code to work within *AS Paint*, the following three lines need to be added into the procedure: **_PROCESSTOOLS**. There's nothing spectacular about them, all they do is to allow the *AS Paint* gadget handling code to access our new code when the user selects the **Magnify** tool.

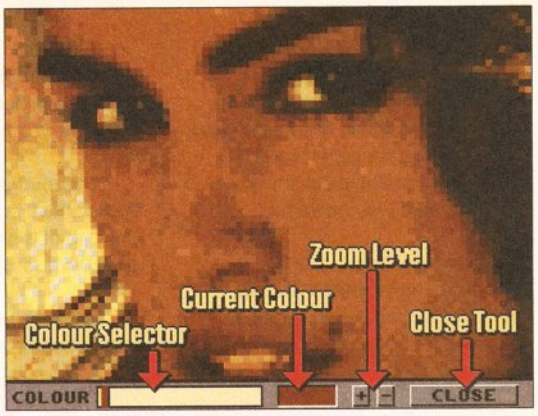
```
If SELECTED=15
    _MAGNIFY
End If
```

27. Next we move on to the two **zoom** gadgets which alter the magnification level. Once again, we first need to check to make sure that the user has clicked on the first of these two gadgets, the + gadget.

28. If the user has selected the + gadget, the program checks to make sure that the display isn't already at the maximum magnification level.

29. If it isn't, the value held in **SFACT** is doubled (effectively doubling the magnification level) and the screen is redrawn by calling the **_REFRESHZOOM** procedure.

30. Once we've checked the + gadget, the program moves on to check the - gadget which decreases the size of the magnification level. Once again, the position of the mouse pointer and the left mouse button are checked.



As well as the ability to draw into the magnified view, AS Paint gives you many extra functions, including drawing with any of the available colours. The current colour is shown next to the colour selector slider bar.

31. Just like the + gadget, we need to make sure that the magnification level hasn't decreased too far. To do this, we simply check to make sure that the value held in **SFACT** isn't less than 2.

32. If it isn't, the value held in **SFACT** is divided by 2.

33. Decreasing the size of the magnification level does present one problem: What happens if by decreasing the magnification level, the area which is magnified moves out of the boundaries of the drawing screen? In order to stop this problem occurring, the same check that we performed earlier is carried out on the 'X' coordinates.

34. Also check the 'Y' coordinate, using the same technique.

35. With the magnification level adjusted, the magnified view is redrawn at its new magnification level by calling **_REFRESHZOOM**.

36. The code then moves on to handle the drawing function, which is available from within the magnify tool. First check to make sure that the user is pressing the left mouse button and that the mouse pointer is over the magnified view screen.

37. Since we're not working on a pixel-by-pixel basis, we need to calculate the position of the mouse pointer relative to the current magnification level. This is done by reading the current mouse pointer position, converting it to screen coordinates and then dividing it by the current magnification level held in the **SFACT** variable.

38. Now that we know which magnified pixel the user has clicked on, the main drawing screen is updated so that any changes made in the magnified view are carried out on the drawing screen as well.

39. With the main drawing screen updated, the magnified view screen is updated too. By calculating where the magnified pixel is to be drawn, it is drawn on to the screen using the AMOS **Bar** command. Note that the size of the filled boxes that the **Bar** command draws are controlled by the value held in the **SFACT** variable.

40. The magnified view lets you scroll around the main drawing area, using the cursor keys so that the position of the magnified view is adjusted accordingly. Instead of a **Inkey$** command, we use the more versatile **Key State()** function that checks the keyboard at a hardware level. First check the **Up** arrow key which has a scancode value of 76. If this key is being pressed, a value of one is returned.

41. The magnified view can only be allowed to scroll around within the boundaries of the drawing screen. A small bit of code is therefore used to keep it within these boundaries. If the 'Y' value will drop below zero when the screen is moved, the 'Y' value is set to zero. Even if the user keeps pressing the up arrow key, the screen will never scroll any further.

42. If the magnified view can scroll further up, the 'Y' coordinate of the magnified view is updated by subtracting five from it. This moves the screen up by five pixels.

43. The magnified view screen is then redrawn by calling the **_REFRESHZOOM** procedure.

44. With the up arrow processed, the program performs the same checks on the down arrow cursor key.

45. The left arrow key is then checked using the same technique.

46. Finally, the right arrow cursor key is checked and the screen updated.

47. If the main loop is executed (the variable **QUIT** contains a value of one), the colour is changed back to that which was selected before the user selected the magnify function.

48. The magnified view screen and the toolbox screens are closed revealing the main drawing screen and toolbar. **Magnify** then exits and the main program is performed bringing all the standard drawing functions back into operation.

49. Paramount to the magnify function is the **_REFRESHZOOM** function that handles the task of redrawing the magnified view.

50. Two local variables are defined, **XMAX** and **YMAX**, which define how many magnified pixels are drawn across and down the screen.

51. The routine enters a set of two **FOR...NEXT** loops that handle the drawing of a single pixel block each time the two loops are performed.

52. Before a pixel can be drawn, the colour setting of the related pixel on the main drawing screen is read using the AMOS **Point** function.

53. The current colour is then changed to reflect this value.

54. With the ink colour set, the magnified pixel is drawn on to the screen at a calculated position using the AMOS **Bar** command.

55. Redrawing the screen at the lowest magnification level can take time. I've included code that allows you to abort the redrawing of the magnified view by pressing the space bar. Check with the code we used for the cursor keys. If the space bar is pressed, the procedure is exited using the **Pop Proc** command.

NEXT MONTH

With *AS Paint* almost complete, all that remains is to add a couple of house-keeping functions such as **Load** and **Save**. Stay tuned! AS

LISTING LISTING

The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

```
1.   Procedure _MAGNIFY
2.        SFACT=8
        QUIT=0
      CLR=CURCOLOR

3.      Rem *** Get 80x60 zoom area...
        Screen 0
        Gr Writing 3
4.      Repeat
5.           X=X Screen(X Mouse)
             Y=Y Screen(Y Mouse)

6.           Box X,Y To ▼☛
X+(320/SFACT),Y+(240/SFACT)
             Wait Vbl
             Box X,Y To ▼☛
X+(320/SFACT),Y+(240/SFACT)
        Until Mouse Key=1 and Mouse Screen=0
        Gr Writing 0

7.      SCRX=Screen Width
        SCRY=Screen Height

        Rem *** Make sure offsets inside ▼☛
screen area...
8.      If X>SCRX-(320/SFACT)
             X=SCRX-(320/SFACT)
        End If

9.      If Y>SCRY-(240/SFACT)
             Y=SCRY-(240/SFACT)
        End If

        Rem *** Open magnify screen...
10.     Screen Open 2,320,240,CLOURS,Lowres
        Flash Off : Curs Off : Cls 1
        Get Palette 0

        Rem *** Open toolbox screen...
11.     Screen Open 3,320,16,8,Lowres
        Flash Off : Curs Off : Cls 1
        Palette ▼☛
$0,$AAA,$FFF,$FF0,$ECA,,$F00,$FF0
        Screen Display 3,,292,,

12.     Reserve Zone 4

        Rem *** Draw colour selector...
        Set Slider 1,2,0,1,0,2,6,0
13.     Hslider 55,2 To 155,14,CLOURS,CLR,1
        Ink 0 : Text 3,11,"COLOUR"
        Set Zone 1,55,2 To 155,14

        Rem *** Draw current colour box...
14.     Ink 0 : Box 165,2 To 200,14
        Ink 5 : Bar 166,3 To 199,13
        Ink 2 : Draw 200,2 To 200,14
        Draw 165,14 To 200,14
        Colour 5,PALTTE(CLR)

        Rem *** Draw '+' box...
15.     Ink 0 : Box 210,2 To 220,14
        Ink 2 : Draw 210,2 To 210,14
        Draw 210,2 To 220,2
        Ink 0 : Text 212,11,"+"
        Set Zone 2,210,2 To 220,14

        Rem *** Draw '-' box...
16.     Ink 0 : Box 225,2 To 235,14
        Ink 2 : Draw 225,2 To 225,14
        Draw 225,2 To 235,2
        Ink 0 : Text 227,11,"-"
        Set Zone 3,225,2 To 235,14

        Rem *** Draw 'CLOSE' box...
17.     Ink 0 : Box 245,2 To 310,14
        Ink 2 : Draw 245,2 To 245,14
        Draw 245,2 To 310,2
        Ink 0 : Text 258,11,"CLOSE"
        Set Zone 4,245,2 To 310,14

18.     _REFRESHZOOM[X,Y,SFACT]

19.     Repeat
             Ink CLR

20.          Rem *** Check colour selector
             Screen 3
21.          If Mouse Zone=1 and Mouse Key=1
22.               XSEL=(X Screen(X Mouse)- ▼☛
55)/(100/CLOURS)
23.               If XSEL>CLOURS-1
                       XSEL=CLOURS-1
                  End If
24.               Hslider 55,2 To ☛▼
155,14,CLOURS,XSEL,1
                  Wait Vbl
25.               CLR=XSEL
                  Colour 5,PALTTE(CLR)
             End If

             Rem *** Check quit gadget...
26.          If Mouse Zone=4 and Mouse Key=1
                  QUIT=1
             End If

             Rem *** Check zoom gadgets...
             Screen 3
27.          If Mouse Zone=2 and Mouse Key=1
28.               If SFACT<16
29.                    SFACT=SFACT*2
                       _REFRESHZOOM[X,Y,SFACT]
                  End If
             End If
             Screen 3
30.          If Mouse Zone=3 and Mouse Key=1
31.               If SFACT>2
32.                    SFACT=SFACT/2
33.                    If X>SCRX-(320/SFACT)
                            X=SCRX-(320/SFACT)
                       End If

34.                    If Y>SCRY-(240/SFACT)
                            Y=SCRY-(240/SFACT)
                       End If
35.                    _REFRESHZOOM[X,Y,SFACT]
                  End If
             End If

             Rem *** Does user want to ▼☛
draw dot?
             Screen 2
36.          If Mouse Screen=2 and Mouse ▼☛
Key=1
37.               MX=X Screen(X Mouse)/SFACT
                  MY=Y Screen(Y Mouse)/SFACT

                  Screen 0
38.               Plot MX+X,MY+Y,CLR
                  Screen 2
39.               MX=MX*SFACT : MY=MY*SFACT
                  Bar MX,MY To MX+(SFACT- ▼☛
1),MY+(SFACT-1)
             End If

             Rem *** Check cursor keys...
40.          If Key State(76)=-1
                  Rem *** Up...
41.               If Y-5<0
                       Y=0
42.               Else
                       Y=Y-5
                  End If
43.               _REFRESHZOOM[X,Y,SFACT]
             End If
44.          If Key State(77)=-1
                  Rem *** Down...
                  If Y+5>SCRY-(240/SFACT)
                       Y=SCRY-(240/SFACT)
                  Else
                       Y=Y+5
                  End If
                  _REFRESHZOOM[X,Y,SFACT]
             End If
45.          If Key State(79)=-1
                  Rem *** Left...
                  If X-5<0
                       X=0
                  Else
                       X=X-5
                  End If
                  _REFRESHZOOM[X,Y,SFACT]
             End If
46.          If Key State(78)=-1
                  Rem *** Right...
                  If X+5>SCRX-(320/SFACT)
                       X=SCRX-(320/SFACT)
                  Else
                       X=X+5
                  End If
                  _REFRESHZOOM[X,Y,SFACT]
             End If
        Until QUIT=1

47.     Ink CURCOLOR
48.     Screen Close 2
        Screen Close 3
   End Proc
   '
49. Procedure _REFRESHZOOM[X,Y,S]
50.     XMAX=320/S
        YMAX=240/S
51.     For A=0 To XMAX-1
             For B=0 To YMAX-1
                  Screen 0
52.               PIXEL=Point(A+X,B+Y)
                  Screen 2
53.               Ink PIXEL
54.               Bar A*S,B*S To A*S+(S- ▼☛
1),B*S+(S-1)

                  Rem *** Has space bar ▼☛
been pressed?...
55.               If Key State(64)=-1
                       Pop Proc
                  End If
             Next B
        Next A
   End Proc
```

Find your local group

This month: Scotland, Wales, special interest groups.

SCOTLAND

Amiga FX

Contact Ryan Dow on 0383 511 258, or write to 4A Factory Road, Cowdenbeath, Fife, Scotland KY4 9SG. Magazine cost: £2 for one issue, £30 for one year. (AS40)

Amiga Helpline Software/hardware help service, free access to PD, DTP fonts and clip-art, plus general chit-chat. Send stamp for details. Contact Gordon Keenan, Amiga Helpline, 6 Skirsa Square, Glasgow G23. Membership £20 per year. (AS37)

Angus Amiga CDTV club Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership. (AS37)

Dunfermline Sound & Vision Club Video, cine, slides, graphics, titling & clip art using Amiga. Meet Viewfield Terrace, Dunfermline, 7.30 pm alternate Wednesdays. Contact Stan Reed, 7 Maxton Place, Rosyth, Dunfermline, Fife KY11 2DG. £1 per meeting inc. tea. (AS38)

Edinburgh Amiga Club Advice, talks, PD exchange, monthly meetings. Contact Stephen Fradley, 114 Duke Street, Edinburgh EH6 8HR, ☎ 031 555 1142. (AS38)

Edinburgh Amiga Group Membership £5, inc free advice and PD. SAE to Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE. (AS37)

Highland PD Advice given. Send SAE for a free list including business, education and Scottish sections. Contact David Paulin on 0463 242431, or write to 1 Whinpark, Muirtown, Inverness. (AS40)

Lothian Amiga Users Group Amiga contacts, group buying of disks, demo evenings, shareware swaps, advice Meet Room 71, Inveralmond Community High School, Ladywell, Livingston, 6.30-9.30pm third Monday every month. Contact Andrew Mackie, 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR. £1 a meeting. (AS38)

Perth and District Amateur Computer Society General advice, talks, Amiga PD. Meetings third Thursday in every month, 8pm at 10 St. Leonards Bank. Membership £6 or free for under 16s. Contact Alastair MacPherson 137 Glasgow Rd, Perth. (AS40)

Redburn Computer Users Group Help, ideas, PC, graphics and business. Meets every second Wednesday 6.30pm to 9.30pm. Contact Ruby Anderson ☎ 0294 313624. (AS37)

Tay-Soft PD Club Non-profit-making postal PD, advice, disk newsletter, helpline 6–10.30pm. Contact Dave Thornton, 46 Balmerino Road, Dundee DD4 8RR ☎ 0382 505437. Membership £2.50 (free Utils disk on joining). (AS37)

WALES

Amiga Maniacs Help Graphics, sound, WB, programming, help. Beginners welcome. Free membership (by post). Contact Johnny, 8 Tan-y-Grais, Caernarfon Rd, Bangor LL57 4SD. (AS40)

Amiga Navigation Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan. PD, advice, even small repairs and social evenings. Weds 7–9pm. Membership £10 per year. (AS40)

Bloomfield Video and Computing Beginners, video techniques. Meetings at Bloomfield Community Centre, Narberth, 7.30pm alternate Tuesdays. Membership £5. Contact Mrs Beryl Hughes, Nashville, 50 Glynderi, Carmarthen, Dyfed SA31 2EX ☎ 0267 237522. (AS40)

Blue Bedlam Free disk-based magazine with variety, news, views, games, etc. Contact Michael Grant, 48 Gills Avenue, Cwrt-y-gollen, Crickhowell, Powys, Wales NP8 1TG. ☎ 0873 811791. (AS38)

ShieldSoft PD, CLI help, AMOS help, newcomers welcome. 26 Doren Avenue, Rhyl, Clwyd LL18 4LE, ☎ 0745 134 3044. Membership free. (AS40)

Solo (Amiga) BASIC and AMOS help, CLI and PD. Contact Mike, 26 Doren Avenue, Rhyl, Clwyd LU8 4LE. ☎ 0745 343044 Mon–Fri 10am–7pm. (AS38)

SPECIAL INTERESTS, BBSs

1520 Plotter Group (ICPUG) John Bentley ☎ 06286 65932. (AS40)

24-bit Club For users of Video Toaster, Opal-Vision, DCTV and AGA machines, Imagine 2, Lightwave and other 3D modelling software. Contact Gordon Keenan, 24-bit Club, 6 Skirsa Square, Floor 1, Glasgow G23. Send stamp for details. Membership £20 a year. (AS40)

Action Replay Users Club For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR. (AS40)

Amiga Boatowners All things nautical, WHY exchange, nautical aid programs etc. Free membership, send SAE to D Beet for details. Lock, Branston Fen, Lincolnshire LN3 5UN. (AS40)

Amiga Buzz BBS

Comms, PD Software, Fred Fish, Assassins Disk etc. All Free. 9pm–5am 7 days a week. Contact David Clift on 0924 494690. (AS40)

Amiga E Support Group Supports all aspects of programming for this excellent new language. Contact John Findlay, 52 Church Road, Braunston, Nr Daventry, Northants. NN11 7HQ, ☎ 0788 891197. Membership free; SAE for details.(AS40)

Amiga Musicians Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus. (AS40)

Amiga Video Producers' Group Disk magazine five times a year; meets quarterly in Swindon. Object library for mainstream Amiga 3D programs (Imagine, Sculpt, VideoScape, etc). For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swindon, Wilts SN5 6AB ☎ 0793 870667 before 9pm. Membership fee £10 a year. (AS40)

AMOS Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS. (AS40)

AMOS Programmers Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD. (AS40)

AMOS Programmers Group John Mullen at 62 Lonsdale St, Workington, Cumbria CA14 2YD. Hints, tips, tutorials too. SAE for info. £10 membership for bi-monthly disk mag. (AS40)

Atlantic Wave BBS 100s of files for download. DTP, clip art, graphics, utilities. First 200 members get unlimited downloads for life. Free membership. Message areas ranging from sport to cookery. All Amiga BBS. Call 0462 481745 (300 – 2400 baud 8N1) 24 hours a day. (AS40)

BASIC Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of BASIC, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall ☎ 0924 892106. (AS40)

Bible Bureau Online scripture output and informal bible study. Quarterly meetings, membership £5 quarterly. Contact AD, 24 Brodie House, 10 Harcourt Avenue, Wallington, Surrey SM6 8AR ☎ 081 669 7485. (AS40)

Bidwell BBS New BBS needs callers. All areas. Free. All speeds to 14;400. 24Hrs. Contact SYSOP Mark Lunt Modem0582 863 906. (AS40)

Bright Lights BBS Amiga-only BBS, 300 – 14,400 BAUD, 350+ files on-line. On-line 7pm–7am every day. Sysop: Alan Clarke. ☎ 021 325 1723 (modem). (AS40)

The CDTV Revolution Discussing and updating the ever-changing CD scene. Contact Lee Beckett, 4 Albert Road, Grappenhall, Warrington, Cheshire WA4 2PG, ☎ 0925 268819. Membership £5 a year. (AS40)

CDTV User Group Newsletter, reviews, advice, helpline, CD swaps. Membership fee £4.99. Contact Gary Ogden, 50 Averill Road, Highfields, Stafford ST17 9XX ☎ 0785 227059. (AS40)

CDTV Users Club Technical support, news, compiling compatible software list. Free membership – just send SAE. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES. (AS40)

Den's Den Mini BBS Unlimited PD Downloads for all callers. Modem only.. 7 days a week 9pm–7am. Free. Dennis Luckett, 39 Seaforth Grove, Southend on Sea, Essex SS2 4EW. ☎ 0702 464818. (AS40)

Digital Music Club First year membership gets you 2 disks a month every month for a year, plus sampling help. Contact Roger Hunt, 10 Devonshire Road, 10 Devonshire Road North, New Whittington, Chesterfield Derbys. S43 2BL. ☎ 0246 454280. Membership £25 a year. (AS38)

Gamer-Link International pen-pal club for gamers. Free swap service, advice on tips and cheats. Life membership £5. Contact Stu, 28 Churchfield, Ware, Herts SG12 0EP. (AS40)

GFA Basic Forum Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free membership. (AS40)

Highlander BBS Lots of files, two CD-ROMs about to go on-line. Free membership. Contact Alan Walker, Mark Price ☎ 0452 384702 & 0452 384557, 300–14,400 speeds, 24 hours. (AS40)

Impulse BBS Comms, files, games and chat. Contact James Norris ☎ 081 698 8978, online 10pm till 6pm the next day. 14.4 HST. (AS40)

In Touch Amiga Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ. (AS40)

Look Northwest BBS 1,000Mb of on-line storage and CD-ROM, on-line games and much more. Speeds up to 14400. ☎ 0282 698380 or 0282 619518. Membership free. (AS40)

Marksman (Trojan Phazer user group) Promotes use of the Trojan Phazer, swaps PD and own programs, disk magazine. Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB. (AS40)

Micro Academy Art, design and art-based games on Amigas. Meet in Richmond area. Contact Don Pavey, 30 Wayside, Sheen, London SW14 7LN, ☎ 081 878 1075. Membership free, except for cost of colour printing and materials used.(AS40)

MUG – MED Users Group Club for users of OctaMED. Disk magazine, advice, news, competitions. Contact Richard Bannister, 6 Glevum Road, Stratton St Margaret, Swindon, Wilts SN3 4AF. Membership free, send SAE for details. (AS40)

Nickelodeon BBS All speeds up to V32BIS. Online 6pm–9am weekdays, 12pm–9am weekends. Large file areas, download on 1st call. ☎ 051 709 8508 (Liverpool). (AS38)

On-Line Network BBS ☎ 081 539 6763 (London). (AS38)

Phoenix Demo Coders, musicians, artists and designers making the best demos. Free membership. Contact Frank, 46 Hall Road, Chadwell Heath, Romford, Essex, RM6 4LJ ☎ 081 597 4661. (AS40)

Ray Tracers Postal club to swap ideas, objects, pictures etc for all formats. Also disk mag and help. Membership 50p. Neil Hallam, 12 Meesons Mead, Rochford, Essex SS4 1RN. (AS40)

System One BBS 1000s of filers on-line, supporting all areas of files and message bases, including Fidonet. Open 24 hours a day, 7 days a week. All speeds up to 16.800K HST and 14.400K V.32BIS. ☎ 0743 791501.(AS40)

Video Visuals Exclusively for video producers, PD library, genlocking, digitising, quarterly disk magazine. Membership £10 per year. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG. (AS40)

Warlock BBS started 1st Jan 94, absolutely free. Phone Mr Manglin between 7-10pm Mon.-Fri. and all day Sat. and Sun. 031 659 5806

Independent Commodore Products Users Group Free PD software, regular journal, technical helplines and discounts. Contact the Membership Secretary, PO Box 1309, London N3 2UT ☎ 081 346 0050 after 6pm, or your local branch: (AS38)
Camberley ☎ Fred Wellbelove 0252 871545. Meetings, lectures, advice.
Chelmsford ☎ David Elliott 0245 460189
Coventry ☎ Will Light 0203 413511
Dublin (CUGI) ☎ Geoffrey Reeves 010 353 1 288 3863. Meetings, newsletter, discounts.
Exeter ☎ John Buckle 0392 214760
Lothian: Andy Ruddon, 65 Drum Brae Terrace, Edinburgh EH4 7SF. Meetings, workshops, discounts.
Macclesfield ☎ Peter Richardson 0298 23644
Mid Thames ☎ Mike Hatt 0753 645728 (8–10pm)
Solent ☎ Anthony Dimmer 0705 254969
South East ☎ John Bickerstaff 081 651 5436. Open nights, newsletter, discounts.
South Wales ☎ Mike Bailey 0446 775287
South West ☎ Peter Miles 0297 60339
Stevenage ☎ Brian Grainger 0438 727925
Stoke-on-Trent ☎ David Rose 0782 815589 (eve)
Watford ☎ Bob Rigby 0923 264510
West Riding ☎ Kevin Morton 0532 537318
Wigan ☎ Brian Caswell 0942 213402
1520 Plotter Group ☎ John Bentley 06286 65932.

Note: this list is provided as a free service for amateur, non-profit-making user groups. *Amiga Shopper* does not endorse or recommend any particular group and cannot be held responsible for any losses or problems you might suffer.

WARNING: YOUR GROUP IS ABOUT TO BE DELETED

Your user group will be listed here free of charge for six months, then deleted to prevent defunct groups being listed indefinitely. The number at the end of each entry is the last issue in which that entry will be included. If you want your group's entry left in, just send in this coupon again a couple of issues in advance. PD libraries are now listed at the end of the PD section – this issue, page 104.

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS36

Group name ....

Type of activities ....

....

Place of meetings ....

Time of meetings ....

Contact name ....

Contact telephone number ....

Contact address ....

....

....

Membership fee ....

This is a new entry ☐ **an updated entry** ☐

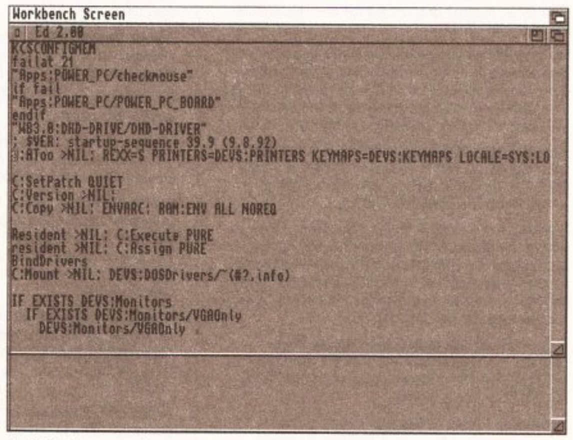
Cracking the Shell

Mark Smiddy takes a close look at hard drive installation and introduces a utility to turbo-charge your startup sequence.

Fifteen years ago, hard disk drives were the preserve of the rich businessman. Ten years ago, only well off enthusiasts could afford them and five years back, all serious hobbyists had them. Today's hard disk is an essential commodity item. Such development is mirrored in software advances. While Workbench 1.3 was happy running from floppy disk, Workbench 2, and especially Workbench 3, do so under protest and are a lot more comfortable on a hard disk.

Commodore's designers are not trying to inconvenience people in doing this. It's just that conventional mass media technology has been outgrown by software. It's true that a lot of these advances could be incorporated into the ROM operating system, but updating the internal ROMs is costly and extremely inconvenient for consumers.

This factor appeared very early on in large computer systems, more by accident than design, and can be said to be universally accepted as the way to do things. It is very interesting to note that this is one thing that will always separate consoles from the true computers. Even CD32 is constrained by its ROM, whereas the A1200 is an infinitely variable combination of ROM and floppy-based operating system.



ATOO in a real startup sequence performing all the normal system assignments. Extra assignments may be added later, so leave ASSIGN resident.

On the face of it, a hard disk must seem like some sort of universal panacea for the ills of large operating systems. It must be remembered, however, that everything unfortunately has its side effects and hard disks are certainly prone to a few niggling problems.

INSTALLING WORKBENCH

A great number of the problems encountered with hard drives tend to

SWITCH BETWEEN YOUR ROMS AND

Regular *Amiga Shopper* readers may remember a little program (in issue 19) called *ISTOO*. It tested the presence of Workbench 2 ROMs in a script. It could be used in an AmigaDOS script to find out which ROM the machine was running at the time, and make the script behave in a different manner accordingly. As a consequence, it meant that could have two ROMs fitted to your machine (with the aid of a ROM switcher) and have a startup sequence that could cater for both.

Now that Workbench 3 is widely available, the time has come for an update. The revised program, shown in Listing 1 (see page 88), tests for the three major operating system revisions: 1.3 (or lower), 2.04 and 3.0. Although the program was developed in assembly language using *Devpac 3*, it should assemble with just about anything, including PD assemblers. You'll find an already assembled version, ready to run, on the cover disk (see page 8).

ISTOO's most important feature is the ability to select a specific hard disk setup. Some changes have been made to this version to incorporate the three major Kickstart revisions and these should be noted by anyone upgrading from the original. It is not necessary to update to this version if you are ROM switching between 1.3 and 2.04 or 1.3 and 3.0. Here are the return codes your startup sequence can expect to receive after calling *ISTOO*:

OK: The success code (RC=0) indicates that a version 39 AmigaDOS library was present and available. This equates to the Kickstart 3.0 ROMs and is compatible with the original *ISTOO*.

WARN: The warning code (RC=5) shows that version 37 was found. This suggests the version 2.04 ROM operating system is fitted. This behaviour differs from the original, which returned OK for the 2.04 Kickstart.

ERROR: The error return (RC=10) reveals the presence of a Kickstart earlier than 2.04. Such a Kickstart will normally be 1.3, since autobooting software was not available until that time. (This result is also used to indicate that the DOS library would not open. This should never happen, and if it does, nothing else will work anyway.) This result will stop a script on pre-2.04 machines: something that must be considered.

ISTOO isn't a large program, assembling to less than 140 bytes. Two modifications can be made, the most important affecting the program's behaviour when confronted by a 1.2/3 ROM.

The result codes for **ERROR** (at line 5) and **WARN** (at line 13) can be transposed so the program returns **ERROR** if it find the version 2.04 ROM and **WARN** for 1.3. This might seem insignificant, but the failure procedure is less complex and, therefore, faster to set up for the older ROMs.

The second modification is really sloppy programming for the sake of size. The version string (line 26) and the routine to close an open **dos library** (lines 19-23 inclusive) can be discarded. This is because the operating system will never close the **dos.library** under normal circumstances, and used in this way, the **it** does not consume any extra resources.

STARTUP SEQUENCE SPEED UP

If you have a basic A600 with a single floppy disk and have no wish to downgrade back to Workbench 1.3, what use is *ISTOO*? None whatsoever, which is one of the reasons the following came to light. Assembly language code may be compact to the point of being curt, but when size is less of a problem, more elegant methods can be used and that usually means resorting to C

At less than 4k long the C version, called *ATOO*, handles a lot of fiddly, early startup bits for you much faster than disk-based AmigaDOS commands. It checks which operating system is in use: ignores v1.3 or less; makes the correct assignments for v2.04 and 3.0; creates and assigns the RAM-based directories; configures the disk device buffers; and optionally executes the correct startup-sequence. The net result can be summed up as a noticeable increase in boot speed, and a lot less hassle into the bargain. *ATOO* is not listed here (you'll find the executable version on the cover disk – see page 8). In essence, it merely performs some simple AmigaDOS functions at operating system level.

In use, *ATOO* has the following synopsis:

```
ATOO [SYS=<dir>] [C=<dir>] [S=<dir>]
```

be getting a suitable copy of Workbench loaded up, after re-formatting for instance. Generally speaking the installation software supplied with a particular drive should do this for you, but older designs leave room for error. In particular, drives designed for the older Workbench 1.2 and 1.3 will not expect all the extra software supplied with later versions, Locale and Fonts for instance.

Provided the drive is of autoboot/autoconfig type (most are) these problems are easily surmounted from AmigaDOS. Buying and installing a very old hard drive sub-system is not something we will concern ourselves with here. This article assumes the drive has been successfully installed and formatted as an AmigaDOS device.

A problem that is often faced by many beginners is how to know if the drive has been formatted as an AmigaDOS device. Formatting software varies considerably unfortunately, but in general terms the drive is usually *low-level* formatted by the supplier and prepared for AmigaDOS format. The software interface between the hardware and AmigaDOS (usually known as a device driver) runs as a background task and is usually started from the drive's internal ROMs during bootup.

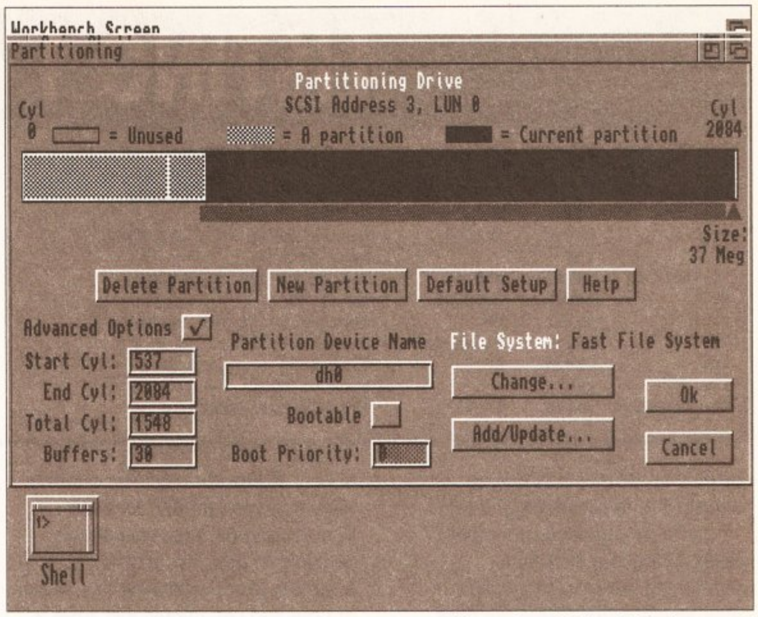
At this stage, the Amiga will be able to recognise a disk device, although it may not be able to read the media. From the Workbench the drive will appear as a disk icon (or icons) marked **BAD** or **NDOS** meaning "not a DOS device". All this mean that the drive has not been formatted by AmigaDOS. You can think of such a drive as if it was a blank floppy disk. In effect, that's exactly what it is.

PARTITIONS AND THINGS

Before looking at the AmigaDOS side of things in more detail, it is worth examining partitions. A hard disk drive is effectively a very large disk, or, looked at another way, a floppy disk is a very small hard disk. The two mediums work in the same way. Electrical impulses representing bit patterns are laid down on the magnetically sensitised surface of a rotating disc. The information is read back in reverse by magnetic impulses causing electrical pulses in the drive head. There is a lot of clever physics involved here. The science of electromagnetism is a field all of its own, but we won't bother with detailed descriptions here. Maybe another time.

On the face of it, having a disk drive that has a storage capacity many times larger than a floppy disk is a real boon. A typical 80Mb unit is capable of storing the equivalent of over 90 floppy disks. A large number of beginners calculate this assuming 90 bootable floppy disks, but there are more calculations to be made than that. Every bootable Workbench disk must contain a certain amount of information and even a workable subset can take up 70 per cent of the effective space, leaving around 300K for applications.

Since a hard disk is a bootable Workbench disk, only a very small amount of the space is allocated to Workbench and its support software (perhaps 4Mb in the worst case). This leaves 80 per cent of usable space on a comparatively small



Using the supplied formatting software to partition a hard drive. This is one of two 52Mb units fitted to the author's A3000 – not everyone is so lucky, but ATOO performs well even here.

TURBO-CHARGE YOUR STARTUP SEQUENCE

```
[DEVS=<dir>] [LIBS=<dir>] [FONTS=<dir>]
[REXX=<dir>] [LOCALE=<dir>] [HELP=<dir>]
[PRINTERS=<dir>] [KEYMAPS=<dir>]
[ENVARC=<dir>] [HELP=<dir>] [CLASSES=<dir>]
[DF0=<nn>] [DF1=<nn>] [DF2=<nn>] [DF3=<nn>]
[DORAM] [EXECUTE]
```

As with much of AmigaDOS, *ATOO* looks a lot worse than it really is. In essence, the directory keywords take an argument which is to be the assigned directory for the V2/3 Kickstart. For instance, if you had copied the Workbench disks into a directory referenced as **Dh0:WB2**, you would use something like this (with everything on the same line, of course):

```
ATOO SYS=dh0:wb2 C=dh0:wb2/C S=dh0:wb2/S
DEVS=dh0:wb2/Devs LIBS=dh0:wb2/Libs
L=dh0:wb2/L FONTS=dh0:wb2/Fonts
ENVARC=dh0:wb2/Prefs/Env-Archive DORAM EXECUTE
```

A whole string of logical assignments are being made in an instant. You only fill in the ones that apply to you. *ATOO* is aware of strange things like **DEFERed**, **PATHed** and **ADDed** assignments and takes care of each in turn. For instance, **Classes**, the Workbench 3 speciality, is additionally assigned to **LIBS:** (as it should be) without any further interaction. The actual path names vary according to the configuration of any particular machine. Assignments that are not specified on the command line are left untouched. Note that **PRINTERS:** and **KEYMAPS:** are **path** type assignments to avoid a bug in Workbench 2.1's Preferences.

Since **S:** is re-assigned by *ATOO*, the *real* AmigaDOS 2 startup can then take place and all this happens in a matter of seconds. The **EXECUTE** switch automatically calls the correct startup-sequence for you. If *ATOO* is run on a machine fitted with 1.3 (or lower) it will not alter any assignments. In fact, it does nothing more than a clean and silent exit with the **WARN** condition set.

If the **DORAM** option is specified, *ATOO* will attempt to create and assign the specified RAM Disk directories **T**, **Clipboard**, **Env** and **Env/Sys**. This option is reserved for use in startup-sequences and should not be used otherwise.

To save even more time, *ATOO* will add disk buffers to the mounted Amiga drives just like **ADDBUFFERS**, but without the extra time involved in loading the command from disk. Here is an example, with assignments removed for clarity.

```
ATOO DF0=20 DF2=15
```

This is akin to the AmigaDOS calls...

```
ADDBUFFERS DF0: 20
ADDBUFFERS DF2: 15
```

...but is far less time consuming. *ATOO* can be used to reduce the number of allocated buffers by specifying a negative amount. This behaviour is directly compatible with the AmigaDOS command. Be warned though – no discrete range checks are performed by the program.

LIVING WITH ATOO

ATOO is not intended to replace commands such as **ADDBUFFERS** and **ASSIGN**, but to act as an adjunct to them. It was designed to fulfil a very specific purpose and should not be used outside the confines of the early AmigaDOS startup. Even so, used on a floppy disk based system it can shave measurable moments off the boot time, since some of the jobs are handled in house, avoiding the need to load transient commands from disk. It may be used at any time, but such use is best restricted to the **ADDBUFFERS** feature. Next month's article will contain details of how to use *ATOO* with Workbench 2 and 3 startup-sequences. For those with a yearning to experiment, here are the first few lines from a startup-sequence using *ATOO* on a hard disk partition with Workbench 3.0. Other versions (including floppy disks) are broadly similar.

```
C:AToo >NIL: REXX=S: PRINTERS=DEVS:Printers
KEYMAPS=DEVS:Keymaps LOCALE=SYS:Locale
CLASSES=SYS:Classes HELP=Locale:HELP DF0=15
DORAM
C:SetPatch QUIET
C:Version >NIL:
C:Copy >NIL: ENVARC: RAM:ENV ALL NOREQ
Resident >NIL: C:Execute PURE
Resident >NIL: C:Assign PURE
BindDrivers
```

LISTING 1 – ISTOO V2

```
DosOpen   move.l   #37,d0        ; V37 AmigaDOS library
          bsr.s    TestDOS       ; attempt to open library
          tst.l    d5            ; returns <>0 if lib opens
          bne.s    Not1.3        ; At least V37...
          moveq    #10,d0        ; Return ERROR if 1.2/3 ROMs
          rts                    ; Back to dos.
Not1.3    move.l   #39,d0        ; configure for V3.0 ROMs
          bsr.s    TestDOS       ; check now...
          tst.l    d5            ; returns =0 if not opened
          beq.s    CloseDOS      ; branch if V37!!
          moveq    #0,d0         ; V39+ ROMs - return OK !
          rts                    ; back to DOS
CloseDOS  moveq    #5,d0         ; V37 - return WARN...
          rts                    ; back to DOS
          TestDOS  lea dosname(pc),a1      ; Open and Close DOS
          move.l   4,a6          ; return result in d5
          jsr      -552(a6)      ; call EXEC OpenLibrary
          move.l   d0,d5         ; save result in d5
          tst.l    d0            ; test if library opened
          beq.s    NoDOS         ; if not, don't try closing it!
CloseADOS move.l   d0,a1         ; prepare to close
          move.l   4,a6          ; load AbsExecBase into A6
          jsr      -414(a6)      ; call EXEC CloseLibrary
NoDOS     rts                    ; return from subroutine
dosname   dc.b     "dos.library",0
"$VER: Istoo 2.02 (28.1.94)",13,10,0,0
```

20Mb unit, all of which can be allocated to applications and data.

Software supplied with most drives includes a section for partitioning the drive into two or more logical units. There are pros and cons to this and it is largely dependent on personal taste. One school of thought suggests two partitions: one for Workbench and another for applications. Another school of thought says you should have a single partition for each operating system (or Workbench revision) in use. Yet another suggests that partitioning is a waste of time and you should just have a single unit for each physical hard drive attached to the system.

Given that every mounted partition consumes precious memory (just like an extra drive) the partitioning decision should be taken carefully, especially if you have 1Mb or less. A good scheme to start with is one partition for every 40Mb of free hard disk space. An extra partition may be created if you are running an alien DOS for a PC emulator. If your machine is fitted with two (or more) Kickstart revisions, these can usually be accommodated on a single partition: more of that later.

By convention, hard drive partitions are labelled like floppy disks. Each one has a device name usually DHx: (but it could be HDx:, JHx: and so on) and a volume name. As with floppy disks, it is usual to use the device name for AmigaDOS operation and leave its volume name for Workbench.

FORMATTING FROM AMIGADOS

Although all hard drive systems support the original AmigaDOS filing system (called **OFS**), most offer the greatly improved fast filing system (**FFS**). This filing system is available on any Kickstart from 1.2 upwards provided the installation was made with a Workbench 1.3 formatter. Each partition can be formatted from AmigaDOS using the standard **FORMAT** command. In this example, let's assume we're using the first partition called **DH0**. Don't try these unless you have backed up *all* the data on your hard drive:

```
1>FORMAT DRIVE DH0: NAME Boot
FFS
```

Users with Workbench 2 .1 might possibly want to add the international mode like this:

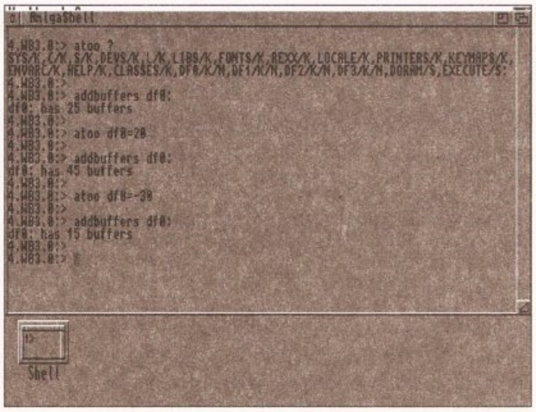
```
1>FORMAT DRIVE DH0: NAME Boot
FFS INTL
```

Finally, users of Workbench 3.0 can get a great improvement in performance by using the directory cache filing system that was introduced for the later ROMs:

```
1>FORMAT DRIVE DH0: NAME Boot
FFS INTL DCFS
```

Hard drives are not generally viewed as an interchangeable media, but it is worth remembering that the later filing system formats are not compatible with the early ROMS. This is especially important if you intend to *soft-kick* the ROM image from hard disk. The boot partition (or the first partition on the disk) must be compatible with the lowest operating system revision you want to use. For instance, if you have an Amiga 3000 with 1.3 and 3.0 fitted, the machine will not be able to recognise a DCFS formatted boot partition. Similarly, the 1.3 side of things will not recognise anything formatted better than FFS. This is exceedingly important if you are using a ROM switcher to access the different versions of Kickstart.

In part two next month, I will be examining, installing and customising Workbench properly and talk you through every step on the way. I will also take a real close look at how to install a wide variety of Workbench and non-Workbench applications. See you then! AS



Using ATOO to add and remove the disk cache buffers for DF0. Note that the ADDBUFFERS command will show how many buffers are in use (although this is rarely necessary).

BEGINNERS START HERE

What is all this AmigaDOS stuff anyway?
AmigaDOS provides access to files and programs that would not normally be usable from the Workbench. It does this by accepting commands entered from a keyboard rather than a mouse. All disk-based operations performed by Workbench are done by Workbench making use of AmigaDOS's facilities, and therefore Workbench is a more protected and user-friendly environment. Until Workbench 2 came along many operations were impossible without reverting to AmigaDOS at some stage.

Although Workbench 2 and 3 have improved matters, a great deal of software simply will not run from Workbench and has to be accessed from the native AmigaDOS environment. There are a number of reasons for this, not least that it is easier to develop an application for AmigaDOS only. AmigaDOS has, and always will have, a distinct advantage: you can specify any supported option for any program every time it is "launched".

Do I need to know AmigaDOS?
No one "needs" to know AmigaDOS, but every Amiga user should know that it exists and have a basic understanding of it. The subject is so huge that several voluminous books have been written about it, so by that yardstick, it must be hellishly complex.

AmigaDOS is what you make of it. Although there are well over 100 commands, most users will manage perfectly well with a basic understanding of a core consisting of less than 20. If that sounds a lot, count how many menu options are available from Workbench. Few people have the vocabulary of William Shakespeare, yet most can write a formal letter.

I can't even set my video's timer, what chance do I have with AmigaDOS?
This problem is one of perception. Who said it was easy to set the timer on a video anyway? We naturally assume that because a video is a consumer item it must be easy to use – nothing is further from the truth. When setting a video we have to juggle with many variables such as time, program length and channel – often via a multi-function control pad. When you use AmigaDOS, you communicate with the machine by giving it written instructions. It looks harder than it really is.

Do I need to be a programmer to use AmigaDOS?
AmigaDOS is as alien to programmers as it is to everyday users since it is a "language" in its own right. Many C programmers stumble with AmigaDOS just as AmigaDOS programmers flounder with C. Although programmers will find it easier to pick up, there is nothing stop the average user getting some hands-on experience.

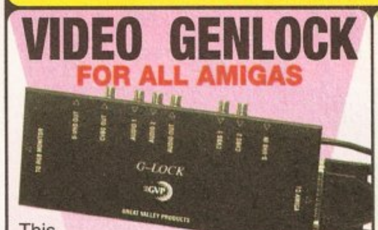
GVP WORLD CLASS **AMIGA** PERIPHERALS

NEW PRODUCTS

RETURN THE COUPON FOR 64-PAGE AMIGA GUIDE

VIDEO GENLOCK

FOR ALL AMIGAS



This extremely high quality Amiga genlock, from GVP, has an intuition-based software control panel with full ARexx and command line interfaces. Easy to use, the G-Lock genlock features many sophisticated attributes among which are:

- *Two Composite Video Inputs or S-Video (Y/C) Input*
- *Simultaneous Composite & S-Video and RGB Output*
- *Video Processor - Real Time Software Control of Video Attributes (Sharpness, Gain, Brightness etc)*
- *ARexx Compatible*
- *Works with Flicker Fixers*
- *Multiple Keyer Modes*
- *Full Audio Support*

AMIGA GOLD FORMAT 94%

G-LOCK ~~£349~~ **£299** INC VAT - VID 2500

NEW 40MHz & 50MHz ACCELERATORS

FOR AMIGA 1200



- *40MHz 68030EC and 50MHz 68030 Accelerator*
- *Unique Feature Connector for Module Expansion*
- *Built-in Memory Management Unit on 50MHz Version*
- *Optional 60ns 32Mb RAM Upgrade*
- *Battery Backed Clock*
- *Optional 40MHz or 50MHz 68882 Maths Co-Processor*
- *Sophisticated Memory Management and Cache Control Software*
- *Kickstart Remapping Technology*

TOP RATED — CU-Amiga Feb '94 97%

The new GVP A1230-II, available in 40MHz 68030EC and 50MHz 68030 configurations, are the most advanced accelerators yet for the A1200. They can make your Amiga run 6½ times (40MHz version) or 8½ times (50MHz version) faster than the standard A1200.

MMU OR FPU?
The 50MHz version includes a built-in Memory Management Module (MMU), for more sophisticated memory control. An optional FPU (Floating Point Unit: for faster maths calculations) is available for the 40MHz version (see below) and 50MHz version (call for price), both have RAM upgrade options (up to 32Mb, see below).

UNIQUE MODULE EXPANDABILITY
The A1230-II is unique in that you can add further functionality to your Amiga by using expansion modules. GVP will be releasing a wide range of optional modules, the first being a high speed SCSI-2 interface. A 16-bit sound sampler and real time frame grabber will follow shortly. All modules can be fitted without invalidating the Amiga's warranty.

RAM UPGRADES

The A1230-II accelerator combo has two 32-bit SIMM sockets for easy Fast RAM expansion. The following SIMMs can be used in this slot.

- 1Mb 60ns Fast RAM SIMM - (RAM 3216) - £69 inc VAT
- 4Mb 60ns Fast RAM SIMM - (RAM 3246) - £199 inc VAT
- 16Mb 60ns Fast RAM SIMM - (RAM 3286) - £1299 inc VAT

SCSI-II EXPANSION MODULE

- *A1291 - Fastest SCSI Controller Yet*
- *DMA SCSI Design*
- *FaaaST ROM Controller*
- *High Speed, Unique DPRC Technology for Direct HD to Memory Transfer*

A1230-II SCSI EXPANSION MODULE **£79** inc VAT - UPG 1600

A1230-II PROCESSOR ACCELERATOR

40MHz 68030EC NO MMU				40MHz 68030EC NO MMU			
NO FPU			WITH 40MHz FPU	NO FPU			WITH 50MHz FPU
0Mb RAM	4Mb RAM	8Mb RAM	4Mb RAM	0Mb RAM	4Mb RAM	8Mb RAM	4Mb RAM
£249	£449	£649	£549	£379	£579	£779	£679
inc VAT - UPG 1240	inc VAT - UPG 1244	inc VAT - UPG 1248	inc VAT - UPG 1246	inc VAT - UPG 1500	inc VAT - UPG 1540	inc VAT - UPG 1580	inc VAT - UPG 1545

24-BIT GRAPHICS CARD

FOR A1500/A2000/A3000/A4000



EGS Spectrum is the answer to all your 24-bit graphics card requirements. It is a high performance, high resolution, 24-bit board that will take any Amiga 1500, 2000, 3000 or 4000 beyond AGA! But the hardware is only half of the picture. Without quality software, your investment will be wasted. Not only does GVP's own award winning graphics application ImageFX fully support EGS Spectrum, but also, using a Workbench driver, nearly all existing Amiga Workbench compatible applications will also work on and support the EGS Spectrum system.

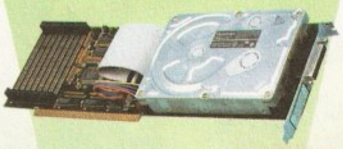
- ***1Mb or 2Mb of On-board Memory*** *2Mb gives, higher resolutions & more colours (1030x768 Vs 1600x1280)*
- *On-board Hardware BLiTTER*
- *Future Re-targetable Graphics Support*
- *Zorro II or Zorro III Autosensing*
- *Scan Rates up to 80KHz*
- *80,000,000 Pixels/sec Pixel Display Speed (8-bit)*
- *Programmable Display Resolution 320x200 to 1600x1280*
- *Supports Data Transfer Rates up to 12Mb/sec on Zorro III Systems*

EGS SPECTRUM

1Mb RAM	2Mb RAM
NEW! £349	NEW! £399
INC VAT - VID 7310	INC VAT - VID 7320

HARD DRIVE CARD

FOR A1500/A2000/A3000/A4000



The HC8+ is a high speed hard drive and RAM card which can also be used to increase your Amiga's RAM by up to 8Mb RAM.

A FULLY FEATURED SCSI INTERFACE FOR A4000s

- *High Speed DMA SCSI Controller Can Handle up to 7 Devices*
- *Ultra Fast Access SCSI Hard Drive Option - See Below*
- *Supplied Unpopulated the HC8+ can be Upgraded to Give You up to 8Mb of FAST RAM - See Below for Details*
- *Direct Memory Access Style Design for Top Speed Transfer*

HC8+ HARD DRIVE CARD

0Mb HD	42Mb HD	120Mb HD
—	~~£279~~	~~£389~~
£129	£199	£299
INC VAT - HAR 1300	INC VAT - HAR 1340	INC VAT - HAR 1422

RAM UPGRADE CARDS

GVP HC8+ INCLUDES 8 SIMM SOCKETS FOR EASY INSTALLATION OF FAST RAM. THE HC8+ WILL ACCEPT 2, 4, 6 or 8Mb USING 2, 4, 6 or 8 SIMMS

1Mb SIMM **£39.95** EACH INC VAT - MEM 3628

8-BIT SOUND SAMPLER

FOR ALL AMIGAS



Capture sound from an external source and play it back in stereo or mono on your Amiga. The latest version of GVP's Digital Sound Studio (DSS8+) enables you to create audio effects for use in games or jingles.

- *New Style High Impact, Clear Poly-Carbonate Casing*
- *Simultaneously Holds up to 31 Sound Samples in Memory*
- *Real-time Oscilloscope, Spectrum Analysis, Echo & Reverberation*
- *AREXX Compatible*
- *Microphone Input*
- *.MOD File & MIDI Compatible*
- *FREE Samples Disk*

DSS8+ **£69** INC VAT - MUS 2510

PLUG-IN HARD DRIVE

FOR THE AMIGA 500 & 500PLUS

+ RAM EXPANSION TO 8Mb



The A500 HD8+ provides the ultimate in hard drive performance, it can also increase the memory of your Amiga by up to 8Mb, support up to six SCSI devices and provide PC compatible emulation via its custom expansion slot (mini slot) see below.

"Without doubt the best hard drive available for the A500 ..."
Amiga Format April '93

AMIGA GOLD FORMAT 92% — BLUE CHIP AWARD

COMPARISON CHART

FEATURES/MODEL	GVP HD8+	ICD TRIFECTA LX	COMMODORE A590 20Mb	EVESHAM REFERENCE 100
*TRANSFER RATE: Kb per second	1066	1028	564	400
GVP DESIGNER STYLING	✔	-	-	-
RAM EXPANSION(MAX)	8Mb	8Mb	2Mb	4Mb
MINI SLOT (FOR FUTURE EXPANSION)	✔	✔	-	-
SCSI INTERFACE	✔	✔	✔	✔
GVP PERFORMANCE Faaast ROM	✔	-	-	-
DEDICATED POWER SUPPLY	✔	✔	✔	-
PRICES FROM	£199	£295	£149	£329

*Figures taken from *Amiga Computing*, October 1993

HD8+ 42Mb HD, 0Mb RAM	HD8+ 120Mb HD, 0Mb RAM
PREVIOUS PRICE ~~£249~~ **£199** INC VAT - HAR 0840	PREVIOUS PRICE ~~£399~~ **£299** INC VAT - HAR 0922

IMAGE PROCESSING

FOR ALL AMIGAS WITH 4Mb RAM



Image FX is a complete solution for all your image creation and editing needs. It has a vast range of facilities, can read and write to many other different file formats and directly controls a wide variety of hardware.

- *24-bit Painting*
- *ARexx Compatible*
- *Virtual Memory Support*
- *Load, Save and Convert to the Following Formats: ANIM, BMP, Clipboard, DCTV, DPIIE, GIF, HAM-E, ILBM, IMPULSE, JPEG, RENDITION, SCULPT, TARGA, TIFF AND MORE*
- *Scanning, Framegrabbing & 24-bit Board Support Comes with Modules for Several Popular Hardware Devices: JX100, IV24, AGA/AA Chipset*
- *Create Animations*
- *Numerous Special Effects Edge Feathering, Shading, Alpha Channel, Morphing, Compositing etc*

AMIGA GOLD FORMAT 92%

CINEMORPH INCLUDED! SEE DETAILS BELOW

Promo Price, originally £269.95

IMAGE F/X **£199.95** INC VAT - ASI 2002

ACCELERATORS

FOR AMIGA 1500 & 2000

FAST! 32-bit TECHNOLOGY

GVP offer a range of A1500/A2000 accelerators that simply outstrip the competition for speed and specifications.



SPECIAL OFFER SAVE £135! 42Mb QUANTUM HARD DRIVE + MOUNT KIT HAR 2043 ~~£234~~ **£99** INC VAT
ONLY WHEN PURCHASED WITH G-FORCE ACCELERATORS SHOWN BELOW

G-FORCE ACCELERATORS	030 40MHz	040 33MHz
Speed MIPS*	12.1	30
Processor	68030EC	68040
Maths Co-Pro.	68882 included	In 68040 processor
Std 32-bit RAM	4Mb	4Mb
Max 32-bit RAM	16Mb	64Mb
Extras	SCSI	SCSI Ser/Par
PRICE	£599 INC VAT - UPG 0430	£999 INC VAT - UPG 0740

*MIPS: Millions of instructions / second, a normal Amiga runs at .67 MIPS

PC EMULATOR

FOR USE WITH HD8+ or A530
PLUGS INTO THE HD8+ OR A530 TO ALLOW YOU TO RUN PC COMPATIBLE SOFTWARE ON YOUR AMIGA

286-16MHz EMU 0500 **£99** INC VAT

VIDEO EFFECTS

FOR ALL AMIGAS WITH 3Mb RAM



CineMorph from GVP opens up the world of Morphing, the process of converting one image to another to create dazzling special effects. Currently very popular in music videos and feature films, morphing has become the fashionable video effect to use. Now with CineMorph you can create these stunning effects on your Amiga.

- *Supports the AA Chipset*
- *Static or Full Motion Morphing*
- *Single Image Warping*
- *Fast Render Times*
- *Renders to HAM-E and DCTV*

Promo Price, originally £99.95

CINEMORPH **£24.95** INC VAT - ASC 4422

16002401/4

THE SILICA SERVICE

SILICA 1978 1993 15 YEARS SERVICE TO YOU

Before you decide when to buy your new Amiga products, we suggest you think very carefully about WHERE you buy them. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or help and advice. And, will the company you buy from contact you with details of new products? At Silica, we ensure that you will have nothing to worry about. We can meet our customers' requirements with an understanding which is second to none. Complete and return the coupon now for our latest FREE literature and begin to experience the "Silica Service".

- ***FREE OVERNIGHT DELIVERY:*** On all hardware orders shipped in the UK mainland.
- ***TECHNICAL SUPPORT HELPLINE:*** A team of technical experts will be at your service.
- ***PRICE MATCH:*** We match competitors on a "Same product - Same price" basis.
- ***ESTABLISHED 15 YEARS:*** We have a proven track record in professional computer sales.
- ***PART OF A £50M A YEAR COMPANY*** With over 200 staff - We are solid, reliable and profitable.
- ***BUSINESS + EDUCATION + GOVERNMENT:*** Volume discounts are available. **Tel: 081-308 0888.**
- ***SHOWROOMS:*** We have demonstration and training facilities at all our stores.
- ***THE FULL STOCK RANGE:*** All of your requirements are available from one supplier.
- ***FREE CATALOGUES:*** Will be mailed to you with special offers and full details of hardware, peripherals and software.
- ***PAYMENT:*** We accept most major credit cards, cash, cheque or monthly terms (APR 29.8% - written quotes on request).

SILICA

HOT LINE **081-309 1111**

SILICA IS A DIVISION OF PROGIS PLC

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Order Lines Open: Mon-Sat 9.00am-7.00pm (Sat 9.00am-5.30pm) — No Late Night Opening	**Tel: 081-309 1111** Fax No: 081-308 0608
CROYDON SHOP: Debenhams (2nd Floor), 11-31 North End, Croydon, Surrey, CR9 1RQ	Opening Hours: Mon-Sat 9.00am-6.00pm — Late Night: Thursday - 9pm	**Tel: 081-688 4455** Fax No: 081-686 4658
ESSEX SHOP: Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA	Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) — Late Night: Thursday - 7pm	**Tel: 0702 468039** Fax No: 0702 468039
IPSWICH SHOP: Debenhams (2nd Floor), Waterloo House, Westgate St, Ipswich, IP1 3EH	Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) — Late Night: Thursday - 9pm	**Tel: 0473 287092** Fax No: 0473 287092
LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA	Opening Hours: Mon-Sat 9.30am-6.00pm — No Late Night Opening	**Tel: 071-580 4000** Fax No: 071-323 4737
LONDON SHOP: Selfridges (Basement Arena), Oxford Street, London, W1A 1AB	Opening Hours: Mon-Sat 9.30am-7.00pm — Late Night: Thursday - 8pm	**Tel: 071-629 1234** Extension: 3914
SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Opening Hours: Mon-Sat 9.00am-5.30pm — Late Night: Friday - 7pm	**Tel: 081-302 8811** Fax No: 081-309 0017

To: Silica, AMSHP-0494-68, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME A 64 PAGE AMIGA COLOUR CATALOGUE

Mr/Mrs/Miss/Ms: .... Initials: .... Surname: ....

Company Name (if applicable): ....

Address: ....

....

Postcode: ....

Tel (Home): .... Tel (Work): ....

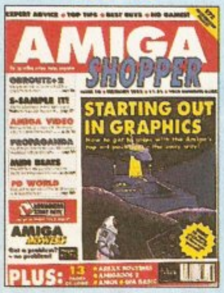
Which computer(s), if any, do you own? 68AB

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.

BACK ISSUES

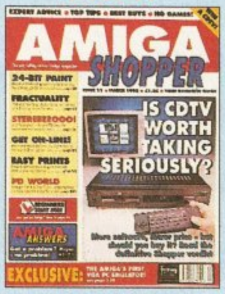
Here's your chance to complete your collection and catch up on all the advice, reviews, tutorials and features you might have missed out on!

ISSUE 10



How best to draw with *Deluxe Paint*; the guide to the best sound samplers available; budget business packages; ARexx; *GB Route Plus 2*, *Showmaker* and Rendale Super 8802 reviewed £3

ISSUE 11



CDTV and its software get a good going over; how to perfect your printing; Harlequin graphics board, Stereo Master sampler, *Genesis* and KCS Power Board PC emulator reviewed £3

ISSUE 13



FREE Tracey covermount and how to use it in our animation special; the unforgettable guide to Amiga memory; PC CDs with the A570; Miracle Piano Teaching System and RocTec hard drive reviewed £3

ISSUE 14



Hand scanners reviewed and rated; 15 memory expansions compared; incorporating sound effects and soundtracks into your animations; artificial intelligence; improve your Amiga programming £3

ISSUE 15



The best in PD software – how to set up a complete software system for nothing; the PostScript interpreter *Post*, *ImageMaster*, *SaxonScript Professional* DCTV and AVideo 24 reviewed £3

ISSUE 22



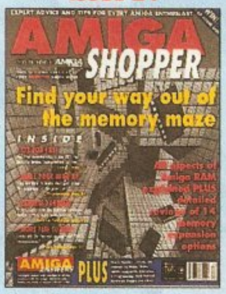
20 printers – dot matrix, inkjet and laser – reviewed and rated; beginner's guide to the Amiga; spreadsheet tutorial; guide to AmigaDOS 3; code clinic; sample storage techniques; hand scanners compared £3

ISSUE 23



How to fit a hard drive to an A600 or A1200; starting with assembler; Cover disk: *Alert*, *Cycle To Menu*, *Kwikbackup*, *LhA*, *ReqTools*, *SnoopDOS*, *Virus Checker*, assembler and linker package £4

ISSUE 24



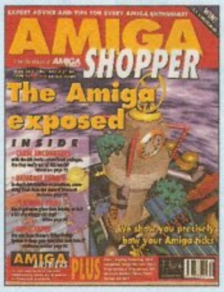
RAM – what it is and what to buy in our in-depth round-up and tutorial; DIY hardware repairs; parallax scrolling with AMOS; eliminating MIDI faults; *Art Expression* and G-Lock genlock reviewed £3

ISSUE 25



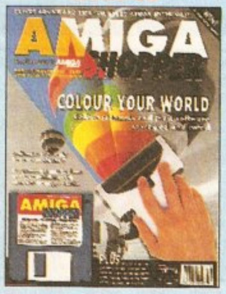
Nine top word processors reviewed and rated; legal advice with Amiga Advocate. Cover disk: *EdWord* text editor/WP, *AZSpell* spelling checker, CompuGraphic fonts and *Virus Checker*...............£4

ISSUE 26



Find out how your Amiga works with The Amiga Exposed; get the best from your samples; fractal landscapes; VHS back-up system, *Personal Paint*, *TypeSmith* and *ADI Junior* reviewed £3

ISSUE 32



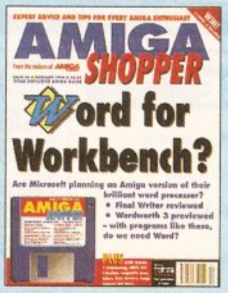
Scanners special – reviews of colour scanners and their software; *Brilliance* reviewed. Cover disk: ACC Hardware Programming Guide, *MapStation*, Listings, *Alarm*, *ASPaint* and *QuickTools*........£4

ISSUE 33



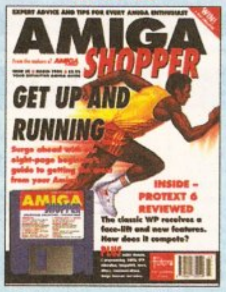
Reviews special – over 50 products rated. Cover disk: *DICE C* compiler, *Address Book* C source, Nexus video backgrounds, *ASPaint* AMOS source PLUS free *Complete Amiga C* booklet...................£4

ISSUE 34



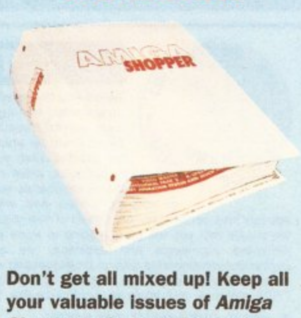
Will there ever be *Word* for Workbench? *Final Writer* reviewed and *Wordworth 3* pre-viewed. Cover disk: *ReSource* Demo, *Rend24*, *ToolsDaemon*, C and AMOS source code, *Ami-Cipher*, *Ambush*, *GUI-Guru*.....£4

ISSUE 35



Special beginner's guide. *Noddy's Big Adventure* reviewed. Cover disk: *HDClick*, Compugraphic fonts, *King Con*, *Fast JPEG*, *Magic Menus*, *Trash Icon*, *Imagine* objects, C and AMOS source code £4

THE AMIGA SHOPPER BINDER



Don't get all mixed up! Keep all your valuable issues of *Amiga Shopper* safe, together and in order. If you're serious about your *Amiga Shoppers*, then you really ought to consider getting a binder..............**ONLY £4.95**

ISSUE 2



2D Paint packages reviewed and rated; which programming language is the one for you; *PageStream 2*, *Scala*, *Broadcast Titler* and the KCS Powerboard PC emulator reviewed £3

ISSUE 3



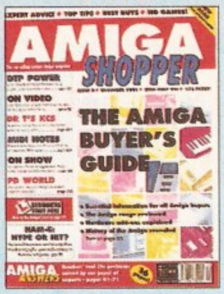
Accelerator cards put head-to-head; the versions of BASIC compared; first installment of C programming tutorial; *PageStream* tutorial; *Bars & Pipes Professional* and AT-Once PC emulator reviewed..........£3

ISSUE 4



Ten of the most popular printers checked out; creating a structured drawing package with C; programming with Intuition; *Wordworth*, *Real3D*, *Imagine*, *Superbase 4*, T_EX and *Pro 24* reviewed £3

ISSUE 8



A complete guide to buying Amigas and related hardware; Prolog programming; the HAM-E graphics system, RocGen genlock, KCS sequencer reviews PLUS tips on DTP, MIDI and spreadsheets £3

ISSUE 9



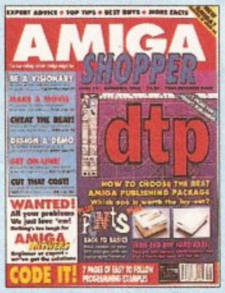
The complete Amiga software guide; how to receive satellite and radio transmissions; designing Christmas cards with *Professional Page*; using MIDI sequencers; reviews of *Scala* and the A500 Plus................£3

ISSUE 16



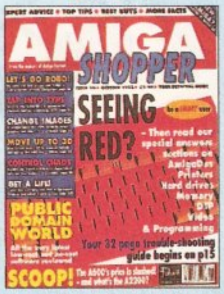
200 top tips – advice on everything from accelerators to Workbench, BASIC to WPs, C to video; getting the most from video titling; *Hit Kit*, *Professional Calc* and HAMA's 290 genlock reviewed £3

ISSUE 17



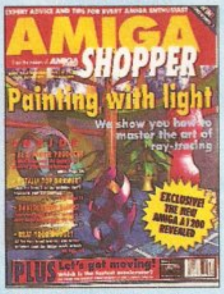
The top desktop publishing packages reviewed and rated; understanding typography; write adventure games with *Visionary*; tips on writing your own arcade game; Roland's new MIDI standard £3

ISSUE 18



Amiga Answers special – 32 pages of solutions to problems on everything from AmigaDOS to video; using lighting to enhance your 3D graphics creations; typographical tips; *Maxiplan 4* reviewed £3

ISSUE 20



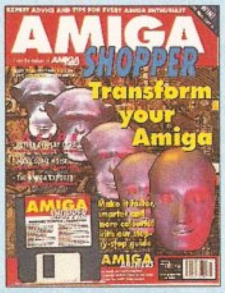
Step-by-step guide to ray-tracing; accelerator board round-up; multitasking tutorial; build a ROM switcher; fractals tutorial; artificial intelligence; *AMOS Professional* and Opalvision reviewed............ £3

ISSUE 21



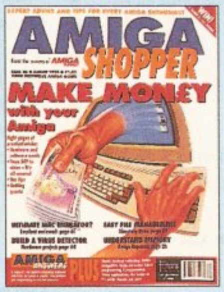
Amiga Shopper Awards for the best buys in '92. Cover disk: CG fonts, *DirWork*, screen blanker, *ICalc*, *LhA*, *PowerSnap 2*, *RDES*, *ReOrg*, *Safe Delete*, *SPClock*, *SysInfo* and *Virus Checker*..............................£4

ISSUE 27



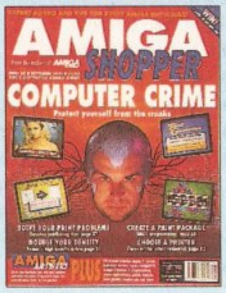
Upgrade your A500 to A1200 level; accelerator round-up; *Professional Page 4* reviewed. Cover disk: *OctaMED*, *XOper*, *Move* file mover, *JuliaMovie*, appointment scheduler, source code and *Virus Checker*........£4

ISSUE 28



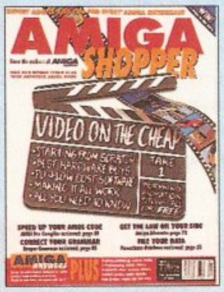
How to make money with your Amiga; Amiga animations on TV; legal advice; chords with *OctaMED*; *Directory Opus*, Emplant, *PageSetter 3* and *Art Department Professional* reviewed £4

ISSUE 29



Computer crime and how to protect yourself from it; Power XL high-density floppy, Ami-Back back-up system, VLab YC digitiser, *Pixel 3D Professional* and MBX1230 accelerator reviewed £4

ISSUE 30



Video on the cheap – the techniques and low-cost software you need; how to use fonts; *Proper Grammar*, TechnoSound Turbo 2, *AMOS Pro Compiler* and *Powerbase* reviewed £4

ISSUE 31



Amiga Answers special – 26 pages of advice; Compugraphic fonts. Cover disk: debugging utilities, *Flexer*, *EasyCalc*, *PayAdvice*, *ASPaint* source code, *Address Book* source code, *Virus Checker 6.30* £4

BACK ISSUES ORDER FORM

AS36

SEND THIS FORM (no stamp required) TO:
***Amiga Shopper*, Future Publishing Ltd, FREEPOST, Somerton, Somerset, TA11 7BR.**
Do not send cash through the post with your mail orders.
Please make all cheques payable to Future Publishing Limited.

Please tick the issues you require:
Prices listed are per copy and include postage and packing. *Asterisk denotes issues with cover disk included. Issue numbers not listed are sold out.

❑ 2	❑ 3	❑ 4	❑ 8	❑ 9	❑ 10	❑ 11
❑ 13	❑ 14	❑ 15	❑ 16	❑ 17	❑ 18	❑ 20
❑ 21*	❑ 22	❑ 23*	❑ 24	❑ 25*	❑ 26	❑ 27*
❑ 28	❑ 29	❑ 29	❑ 30	❑ 31*	❑ 32*	❑ 33*
❑ 34*	❑ 35*					

❑ **BINDER** £4.95

Total amount payable: £❑❑.❑❑

Name ....
Address ....
....
....
Post code ....
Telephone No ....
Method of payment (please circle) Access • Visa • Cheque • PO •
Credit Card No. ....Expiry Date.........
Signature ....

Talking Shop

Have your say, and perhaps win £25 into the bargain! Send your missives to: "Talking Shop", Amiga Shopper, 30 Monmouth Street, Bath, Avon BA1 2BW.

GLORIFY THE AMIGA

I am writing with regard to Paul Jackson's letter to Amiga Answers which was printed in the February edition of *Amiga Shopper*.

I would like to congratulate GW, who replied to the letter, on the good advice he gave. Many people in your area of work (other Amiga magazines) would have jumped at the chance of telling Paul that the Amiga was obviously the answer to his problems and that he should go out and spend money on genlocks, video titling software and the like. You realised that this was not the case and that with limited funds and lack of experience this could have been a huge financial blunder. Instead, you gave sound advice on how Paul and his colleagues should think carefully about the task and go about seeking professional help with the more technical side. For this you have my utmost respect.

It would have been all to easy to glorify the Amiga, not thinking about the actual people in question. You did not. Please publish this letter; you deserve the credit.

Justin Washtell
Isleham
Cambridgeshire

Thanks for your praise, Justin. We do our best!

FURTHER COST

As a regular reader of *Amiga Shopper*, I find it interesting and informative. However the recent inclusion of cover disks with every issue makes it expensive for someone, like myself, on a fixed low income, especially when in order to take full advantage of the more useful offerings on the cover disk I find that a further cost is involved.

I would like to refer to the recent December and January issues. December – the *ACC Hardware Programming Guide* required a further purchase of £12.60 for the full system. However I am pleased I could not afford it since the review in the January issue by Toby Simpson wasn't exactly encouraging. January – the *DICE C Compiler* also required a further purchase of £24.95 – I would love it but, with Christmas, where does one find the money?

Could I suggest an alternative – that each cover disk contains a further instalment of the software so that eventually the complete package has been purchased. This would also ensure a continuing readership.

Brian Wordsworth
Rowlands Gill
Tyne & Wear

It's a fairly common thing among computer magazines to release demonstration versions of programs on their cover disks, giving readers the option to try the programs out before buying. Clearly we made a mistake with December's disk (I'm sorry, I'm sorry!), but January's was ideal – the demo version of *DICE* is perfectly useable as it stands. If you want the more powerful version then you have to pay for it.

If you want to know more about our plans for the cover disk, turn to page 113.

VALUE FOR MONEY

I write in response to the article *Absolute Perfect Timing* found in issue 33, regarding the review on SFC from Amiga Centre Scotland.

We would like to take this opportunity to inform you that Simpatica is available for £350 including VAT, and has been marketed at this price for over a year now. Therefore, the statement under the Checkout SFC section, Value for Money (where Simpatica was used for comparison) is grossly misleading.

If you would like any further information regarding this matter, please contact us.

Lee Gibson
Optonica
☎ 0455 558282

You're perfectly right, and the reviewer in question has been sent on an elementary economics course.

VIRUS PROBLEMS

Today I decided to buy *Amiga Shopper* issue 34 for the contents of the cover disk. There was only one program on the disk that interested me, *Virus Checker 6.33*. At present I run *Virus Checker 6.26*, so, I was keen to bring it up to date. After paying for my goods I rushed off as fast as my legs would take me, back home to my faithful A1200, ready to install the program on to my hard drive.

Quickly I tore the disk from its plastic bag, write protected it, virus checked it with version 6.26, backed it up and booted up. "Where's the *Virus Checker* icon?" I said in horror.

Heavy hearted, I took up the magazine and started to read. On page 13 I was saddened to read that it could not be included due to last minute technical problems. Why oh why could you not have had technical problems when printing labels for the cover disk – the very thing that attracted my eye?

D Fisher
Colchester
Essex

Well, this seems to have upset a few of you. I had to pull the program at the last because we simply couldn't get it working properly on all the machines in the office, and putting out a non-functioning virus killer is a good way to cause panic. By this time, of course, the cover disk labels were with the printers. We still haven't been able to solve the problem – it works on some of our machines and not others. If anyone wants to try it, send in a disk and an sae and I'll give you a copy.

SORT OF CRUEL JOKE

Was the "Before The Mac" competition in issue 34 some sort of cruel joke from *Amiga Shopper*?

While I was flipping through the issue, my eye was caught by the chance to win a free annual subscription to the best Amiga mag about. All I had to do was supply the name of the predecessor to the Apple Macintosh, which, if I am not mistaken, was the Apricot, and send my answer to the usual Bath address by Tuesday 4th January – the day the issue went on sale!

Come on lads and lassies, be fair – don't put such a tempting offer out of reach for all of us except those living in the Bath vicinity.

JL McGrath
Colchester

Ah... another gremlin! We intended to set the closing date for 11th January, but someone crept into the office and put the date back a week while nobody was looking.

Never mind, you wouldn't have won – the answer is the Lisa.

THE REAL VERSION

£25 WINNER

In response to ET Maguires letter in issue 29 regarding the problem of using the *Fountain* program with Workbench 2. I'd like to assure him, and anyone else who is having problems with this, that Commodore have supplied all that is needed to get the program working correctly.

The problem lies in the "version" command itself. It will always tell you the version number of the library that has been loaded into memory, even if you give it the full pathname of the library you actually wish to check. Therefore, when you are checking out the version of the diskfont.library, it will always show the version number of the one on the Workbench disk. The best way to check out the real version number is to jump into the Shell, and type "type <pathname><libraryname> hex" and hit a key to pause the display when the version number is shown. You will find that the version number of the library on the fonts disk is in fact version 37.58, which is what is needed.

Therefore, to get the *Fountain* program to work, just copy the "diskfont.library" from the Fonts disk to the "libs" drawer of the Workbench disk and reboot. You may have to clear some space from the Workbench disk as the new library is more than six times the size of the original. Also, using Compugraphic fonts on a floppy-based system is painfully slow. Anyway, I hope this clears any confusion up.

JM Severinsen
New Zealand

Reader Ads

...or your chance to reach 50,000 fellow Amiga owners for only a fiver.

FOR SALE

A4000/030, 2+4 Mb Ram. Western Digital 250 Mb hard drive. Phillips colour monitor. Power high density external drive. 300 utilities & games. Still under guarantee. Boxed as new. £1400. ☎ 041 8870536 Neil

Star LC24200 colour printer, £170. Turbo print £22. Audio master sound sampler £15. Cartoon Classics software £15. A500 modulator £20. Music-x 1.1 £15. Transwrite £8. Magazines. ☎ 0242 678681 Chris

Printer: Panasonic KXP-2133. 24 Pin colour. Boxed as new. unused colour kit. With lead. Sell for £110. North London. ☎ 081 951 3342 Mr Patel

B2000 twin floppy £110. SCSI 52 Mb £80. 2 Mb on 8 Mb card £70. Flicker fixer £80. A2286 bridgeboard 5 1/4" drive. SVGA card £70. CBM 1960 multisync monitor £240. ☎ 0799 527336 Andrew

A500+ 2 Mb external ram expansion, fully populated, no thru-port, £55. ☎ 0923 241724 Clive

Amiga 500+ 1 Mb ram. Boxed. Only 6 months old, still under guarantee. Games, manuals, joystick, everything included £150 ono. ☎ Tony 0533 706664 (Leics). Please, leave a message if I'm out.

A500 3 Mb. A590HD extra floppy. C1901 monitor, workstation, hand scanner, WB1,3, Kcs emulator, Dos 5.0, manuals, lots of software, games, extras. All good condition. £475 the lot. Stewart ☎ 0564 794268

A500 accessories. SSL A5000 4 Mb accelerator £160. Power computing 64 greyshade scanner £50. 4 Mb expansion board £70. Dual disk drive with antivirus £70. Ppage 4.0 unused £70. ☎ 081 568 4800

A4000, two 1 meg simms for sale £60. ☎ Flint 0352 735030 (Clwyd)

Amiga 1500. WB1.3, monitor, 40 Mb hard drive, Flicker fixer, Scanner, Genlock plus software £450. ☎ 021 554 8327 after 6pm.

Amiga B2000, twin floppies £250. Microbotics 8up RAM board with 2 Mb £70. Digiview 4.0 plus Hi-res Hitachi B/W CCTV £185. Also Digipaint, Dpaint III £30 each. ☎ 0621 772954 only after 6pm

Microbotics M1230xa 50 Mhz 68030 accelerator. Including 4 Mb ram and MMU. Suitable for Amiga 1200. £360. Craig ☎ 061 273 3464

Video for Amiga Rocgen Genlock 300c £75. Genlcok splitter lead £10. Video image enhancer £50. All boxed with instructions. ☎ 0983 753534

Games/Utilities. All boxed original. Over 150 titles. Must sell. £2/8 each plus printer, drive, etc. Very cheap. SAE please to: Mr G Rogers, 24 Northview, Swanley, Kent BR8 7BQ

A3000 18 Mb ram, 425 Mb H/D, CBM 1960 multisync, HP510 desk-jet, Opalvision, GVP clock, Imagine 2, Image FX, Real 3D pro, XCAD 3000, Dpaint IV, Mini-office, bits/bobs, all disks/manuals excellent condition. Offers around £3000. Mark ☎ 041 357 4843 evenings

Power 1204 accelerator board 4 Mb memory, FPU + clock. Perfect condition £160. Also Scala Pro V1.12 £55. Vista Pro 3 £35. Both boxed with manuals plus few Karafonts cheap. ☎ 021 745 9433 anytime

A500 2 Mb. Games, mice, 2nd drive, Blitz copier + blanks £325. US robotics sportster 14.4k modem £220. AMAS sampler £30. Vidi 12 AGA £55. ☎ 0582 715536

Amiga B2000, twin floppies, 3 Mb ram, 42 Mb SCSI HD, Philips 8833 II monitor. WB 2.0. Bags of games and PD for only £400. Paul ☎ 081 671 2643 after 8 pm

Genuine Amiga software and CD collection for sale. Cheap. Send £1 for list. M Williams, 6 Glasfryn, Raikes Lane, Mold, Clwyd CH7 6LR

4 Mb 32-bit Ram Board with 50 Mhz 68882 FPU and battery backed clock. For use with Amiga 1200. Brand new, unused £280 ono. James ☎ 081 778 7281 evenings

Amiga 1200, 60 Mb internal hard disk, including warranty, 6 Mb ram, FPU, colour monitor, including warranty, external floppy drive, serious and games software, offers around £800. ☎ 0246 221750 only after 6pm

Amiga 4000/040 340 Mb disk, 10 Mb ram, CBM 1960 monitor, four months old, IV24 VIU-CT, R3DV2, Simpatica, Morph+, ADPro 2, DPIV AGA, Broadcast Titler 2, VU fonts, all literature, £3,500. Robin ☎ 071 622 9966 x222 9-5pm

A1200 85 Mb HD, Ink-jet printer, hand scanner, Philips monitor, £1000 worth of original software, 100 mags, excellent condition, sell for £950 ono. Ian ☎ 0257 426125

Emplant Deluxe macintosh card and vortex golden gate 386 card. Open to offers on either/both. Ash Hogg ☎ 0926 814132 (daytime) 0926 422146 (evenings)

SERVICES

The Shining BBS. Amiga only system. Loads of files, messages and anything else you could possibly want! All speeds to 14400. Open all cheap rate times! Call it now! CUL8R. ☎ 0730 895789

Amiga Buzz BBS: Amiga only system, hundreds of files online. No upload/download ratio. Great Sysop. ☎ 0924 494690 between 9pm and 5am 7 days a week

It's only £5 to sell your used hardware and software in *Amiga Shopper*

Sell your excess hardware and software with *Amiga Shopper* Reader Adverts. Just fill in the form and send it to us along with a cheque (made payable to Future Publishing) or postal order for £5. But **BE WARNED**. This magazine is not a forum for selling pirate software or other illegal goods. Software must include all issue disks, manuals and a signed statement that all other copies have been destroyed. Please advise us if you are offered pirate or copied software by advertisers. All ads are accepted in good faith. The editor reserves the right to refuse or amend ads. We accept no responsibility for typographical errors or losses arising from the use of this service.

Trade ads will not be accepted, including anyone advertising the sale of PD software.

Issue 36

Name ....

Address (not for publication) ....

....

....

Postcode .... **Date** ....

Tel ....

Tick one box to show required section heading

For sale .....❑

Wanted .....❑

Personal ....❑

Fanzines ....❑

Use one space for each word. Only the words in this section will be printed.

Return with your cheque to: Reader Ads, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW.

Unfortunately we cannot guarantee insertion in a particular issue.

I have read and understood the conditions for the inclusion of my ad.

Signature ....

SOFTWARE for free

Welcome Graeme Sandiford, your new connoisseur of both appetising and tasteless PD software and shareware

It's good bye from Ian and hello from me. I'm Graeme Sandiford and I'll be doing my best to keep up the hard work Ian has put in over the last 25 issues. This issue's crop of PD is a truly mixed affair. There are some good compilations, a couple of disk mags, some excellent animation tools and a selection of educational software. There's something for everyone, so get stuck in and remember if you know of any good PD or Shareware, please feel free to send it in.

MainActor 1.16

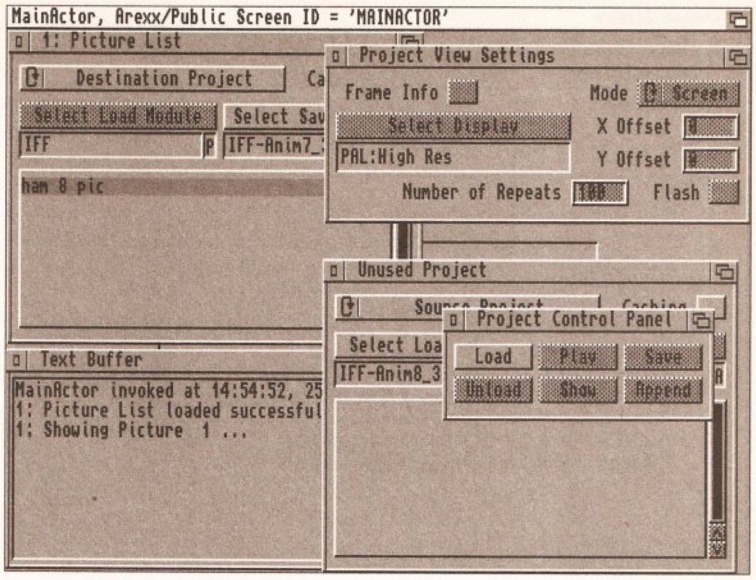
PDSoft (Disk number V1229)

MainActor is a rather tasty shareware animation tool from Markus Moenig of Germany. It will combine any *Anim 5*, *7* and *8* format animations or single frames into a single file which it can then display directly from disk. This means you can play an animation larger than your memory size would normally support. Despite what you might think of the screenshot, this package has a logical and easy-to-use interface. *MainActor* has a modular design that provides a clear display of a number of animations. It opens a window for each animation you load, a project control panel, project view settings and a useful text buffer.

You can open several animation windows simultaneously, but only two will be active at any one time. One will be the source window and the second the destination. Any other open projects become inactive until they are selected as a new destination source. Once you have two active windows, you can move to the project control panel in order to append whole animations or frames from the source window to destination window (please note that both the append and save functions have been disabled in the unregistered version). *MainActor's* text buffer keeps a list of all of the commands carried out or attempted.

As well as all these useful functions, the program also sports AREXX support. This, combined with its excellent GUI and support of AGA graphics modes, make it an ideal choice for both experienced and novice users.

Program rating 9/10



MainActor is a versatile animation compiler with a modular interface.

D-DAY 6-6-1944

Mr A.M. Cooke

D-Day 6-6-1944 is an educational programme created with the *HyperBook* authoring system. It's an interactive guide to the major events, military forces and commanders in the Second World War. It covers the major battles such as Germany's invasion of Poland, Norway and Denmark, the battles of Dunkirk and Britain, as well as D-Day itself.

It provides a chart of the German and Allied high command structures, as well as their plans and the factors that governed their success or failure. There is also a detailed map of the countries involved in the



Let D-Day be your interactive guide to the Second World War.

BEGINNERS — BEGINNERS START HERE — BEGINNERS

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software or "freeware" is only one branch of this area; the other main one is shareware.

Essentially, freeware may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her hard work.

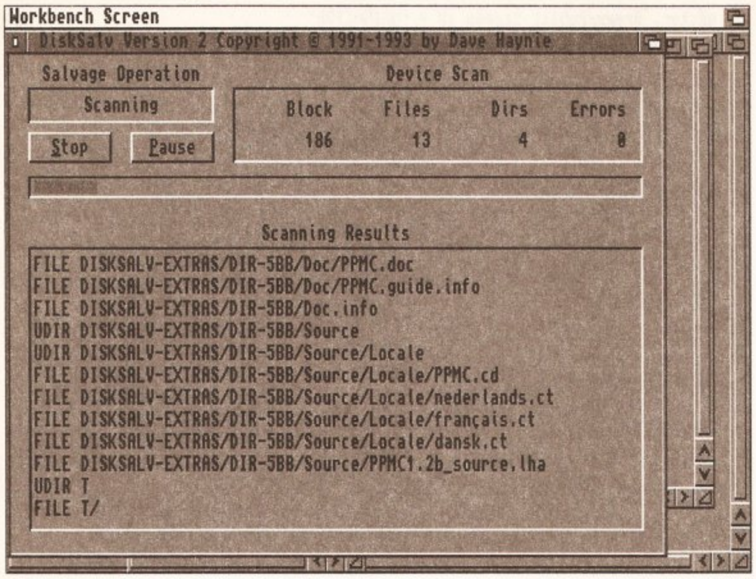
The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.



DiskSalve will attempt to salvage what it can from your damaged disks.

conflict. It is colour-coded to show which country they were protected or ruled by. The programme is extremely well researched and provides a fair level of interactivity, but it is let down a little by its looks. Although having said that, war is not a subject that lends itself to colourful fonts and backdrops.

D-Day 6-6-1944 is a good way of gaining an overview of the events of the war without having to plough through musty intruder-killing sized books. Although, strictly speaking, it is not PD it can be obtained from its author Mr A M Cooke for a small fee of £5. He can be contacted by writing to: 195 Woodmansterne Road, Streatham, London, SW16 5UB.

Program rating 7/10

PD SOFT DISK V1204

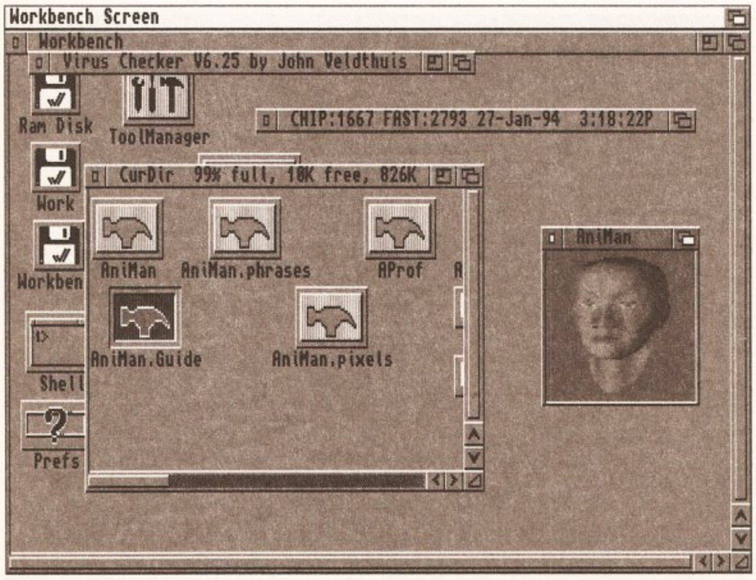
Without a doubt, the star of this compilation is the successor to one of the longest running utilities for the Amiga, *DiskSalve 2*. *DiskSalve* has long been an almost indispensable disk recovery and file undeletion tool.

It will scan either a floppy or hard disk for deleted files or damaged sectors and will then allow you to undelete a chosen file or salvage files from a damaged disk. It's been one of my most reliable tools for some time now, even succeeding where some commercial packages have failed.

Another incredibly useful tool to be found on this disk is version 6.28 of John Veldthuis' *Virus Checker*. Among this version's new features is the ability to check archives and the use of Commodore's Installer program. It will also recognise the DM-Trash virus.

Lace Pointer is a small utility that will automatically interlace the Amiga's mouse pointer which, as it is a hardware sprite, is always displayed at low resolution no matter how unwieldy this may be in your current screen resolution.

Nick Prefs is a suite of programs that act as additional preferences for Workbench 2.0 users. *Wb Picture* allows you to choose a background picture for your workbench. With *Busy Pointer* you will be able to alter



But Doctor, there really is a little man inside my computer who talks to me.

RATING THE PROGRAMS

I'm almost as awkward as Ian, when it comes to rating programs. Program compilations, clip art collections, disk magazines and similar disks are given a "Product Rating". As you're really paying for a group of things, on a disk, the "Product Value" is an estimation of the disk's collective value.

Disks with only one program, or programs which have been downloaded from bulletin boards, are given a "Program Rating". This reflects how good I think they are, including how useful (or amusing) I find it, documentation and reliability. Ratings are out of 10 – products with ratings of 7 or above are worth a look at, those above 8 are essential.

the animation of your mouse pointer displays when your computer is busy.

Also included on this disk are *PPMC*, a packer for non-executable files, and *YAK*, a commodity similar in function to *MightyMouse* or *DMouse*, and also several other useful programs. This disk is definitely worth a look for anyone who doesn't have a copy of *DiskSalve* or *Virus Checker*.

Product value 8/10

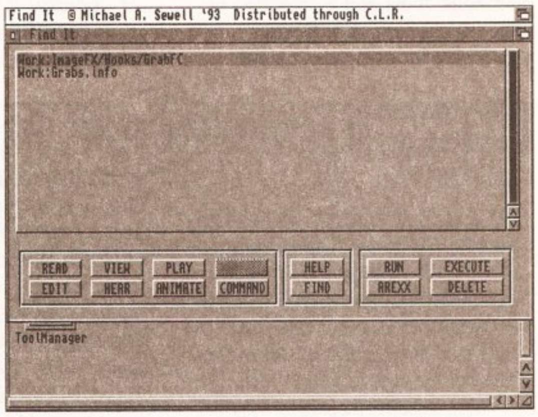
BIGANIM

PD Soft (disk number V1230)

(Also see page 8.) Have you ever been told about an excellent animation, such as Craig Collins' *Last Stand on Hoth*, and upon seeing it felt just a tad disappointed with its duration? The trouble is that every animation is limited to the memory size of the computer it is being played on. *BigAnim* gets around this limitation by reading the animation from disk. In the past this has resulted in slow and jerky playback speeds. *Biganim*, however, achieves a more than respectable playback speed by loading chunks of an animation asynchronously, that is loading a chunk from disk as the previous one is being displayed.

The results even on an anim 5 format animation are very good and with an anim 7 format they are astounding. There's no support for the anim 8 format. This is no great loss as the only advantage of this format over anim 7, which is the quicker of the two, is that it is an official IFF format.

If you're unhappy with the results you can implement any of the program's options. These include: **Loadall**, to load the whole animation into memory if it will fit; **Hires**, to force the screen to hires interlace mode; **Blank**, to remove the mouse pointer from view; **Bufsize**, which will alter the default size of the program's buffer. The most useful option is **Verbose** which will display some important information about the anim that has just been displayed. The information includes the animation's length in frames, its type and format, its speed in frames per second (fps) and whether the options you have set are optimal or not. Using the information provided by the verbose option, you can alter the other functions in order to produce the smoothest and quickest playback possible on your hardware setup (a higher buffer value alone



Track down lost files and save hours with Find It.

does not always improve things).

Other noteworthy inclusions to this disk are *S_Anim5* and *WBVerlauf*. *WBVerlauf* is a tiny program that will transform the drab colours of your Workbench into a lovely coppertone. *S_Anim5*, on the other hand, is rather more useful in that it will turn any anim 5 animation into an executable file. The advantage of doing that is that if you want to distribute an animation, you won't need to include a display program and, as a result, you can fit a larger animation on disk.

Program rating 10/10

LSD TOOLS 114

Highland PD

This disk will undoubtedly appeal to our male readers. Why? Because, whether men admit it or not, we are all suckers for a good gimmick. *AniMan* is a splendid example of an almost useless gadget. It displays a window on your desktop with a talking head! What is not immediately obvious, however, is that you can give it verbal

✲ AMIGA PD - ALL Models ALL Versions ✲

The KEW = II Collection

P.O. BOX 672
South Croydon
Surrey CR2 9YS
Tel: 081 657 1617

Public Domain and ShareWare fully tested, documented and virus free!

THE LEADER - OTHERS CAN ONLY FOLLOW!

The LATEST in PD and SHAREWARE!
PLUS! Free help & advice by post or telephone - anytime.
* Written Help! sheets.

FREE P&P!

* Edited & Printed docs
* YOU choose the programs. WE make you YOUR disk.
* 1-3 disks £1.50 each.
* 4 plus disks £1.25 each.

Unique 'PICK YOUR OWN PROGS' for FULL DISK VALUE

✲ FREE CLUB MEMBERSHIP ✲
INFORMATION PACK & CATALOGUE DISK only £1
✲ Includes INDEX & LATEST Virus Checker & FREE updates ✲

MEMORY EXPANSION

1Mb x 1	- 80ns		DIP	6.03
256 x 4	- 80ns		DIP or ZIP	6.03
1Mb x 4 (44C1000)	- 80ns	A3000	ZIP	21.82
1Mb x 4 (44C1000)	- 80ns	Static Col	ZIP	21.82
1Mb x 8	- 80ns		SIMMs (GVP)	37.60
4Mb x 8	- 80ns		SIMMs (GVP)	135.13
4Mb (32)	- 70ns	4000/30	72 Pin	141.00

Please phone for the latest prices. VAT included. Delivery £5.88

VISA **KINGSWAY UK LTD** Access

Phone: 0923 836473 **Fax 0923 836474**

18 Foxfield Close, Northwood, Middlesex HA6 3NU

WMC PD

ALL DISKS GUARANTEED VIRUS FREE
24 HOUR TURNAROUND
TELEPHONE SUPPORT/HELP LINE

GAMES

ALL NEW STAR TREK + Y (2)
Great new trek
BLACK DAWN + Y Alien Breed meets Dungeon Master
DOWNHILL CHALLENGE + Y
Downhill skiing
DR MARIO + Y Nice puzzle
18 HOLE GOLF + Y (2)
Excellent golf game
JIGSAW + Y (2)
Tricky teaser with a twist!
MAD FIGHTERS Y
SFII style beat em-up
MOOSE DRIVE + Y
Great racing game, very slick.
MOTOROLA INVADERS Y (2)
Space invaders in your pute.
OLYMPIAD + Y (2)
Lemmings Olympic Games.
OPERATION FIRESTORM + Y
Commando shoot em-up BRILL
ORC ATTACK + Y GORY!!
ROBOULDIX + Y
Best yet of the Boulderdash clones.
SCRABBLE + Y Classic
STARBASE 13 + Y (2)
Best PD game ever. GET IT!!!
STARIANS + Y Brill shoot em-up
THE SIMPSONS + Y
Bart & Co platformer.

UTILITIES

AMIGA FOX DTP + Y
FLEXIBASE + Y
Easy to use database
HARD DRIVE UTILITIES + Y
MR Backup, Fixdisk, & others
ICON EDITOR III V2.0 + Y
Create or edit icons
OCTAMED 2 + Y
One of the best PD music makers
PARNET SET-UP + Y (2)
2 way network file system
PCTASK V2 + Y
Best PC emulator
PRINT STUDIO + Y
Prints graphics & text. Excellent
PRINTER DRIVER GENERATOR + Y
Create your own printer driver
PRO C MANUAL V3.0 + Y (5)
Docs, Utilities & examples for C
STOCK ANALYST + Y
Analysis & tracking program. Shows when to buy and sell shares.
TURBOTEXT V1.1 + Y
Good word processor
TV GRAPHICS + Y (2)
Fonts & backdrops for video titles
VIDEOBASE + Y
Great J. Cassar prog, excellent reviews. 3 other goodies included

EDUCATION

COMMUNICATE + Y
Shows 8 sign/code languages. Fascinating
COLOUR THE ALPHABET + Y
Effective teaching aid
D-PAINT TUTOR + Y
MATHS INVASION + Y
Sharpen up your mental arithmetic. Fast & furious, but fun!
SPELLBOUND + Y
Impressive spelling & logic game.
VISIT TO THE RED PLANET + Y
Guided tour of Mars. Excellent pictures

PACKS

ELECTRONICS PACK + Y
TRONICAD provides readymade circuits: DIGITAL BREAD BOARD tests logic circuits; + many others.
4 disks £3.50
PROGRAMMERS PACK + Y
Fortran, Pascal, C, + lots of utilities
5 disks £4.45
IMAGINE OBJECTS/TEXTURES +Y For your favourite ray tracer. Amazing value
7 disks £5.95

THIS IS ONLY A SMALL SAMPLE OF OUR VAST SELECTION OF PD TITLES
WE STOCK THE FULL RANGE OF SCOPE, FRED FISH & ASSASSINS
WE CAN SUPPLY ANY PD DISK ADVERTISED IN THIS MAGAZINE

+ - A500/A600 compatible, Y - 1200 compatible, () - number of disks

PRICES
1-9 disks 1.20 each
10-19 disks 1.00 each
20+ disks 0.90 each

POSTAGE
UK - 50p per order
Europe + 10p/disk
World + 20p/disk

Cheques/POs payable to
WMC
5 Tai Arthur, Penisarwaen
Gwynedd LL55 3PN
Tel/Fax 0286 871815

CATALOGUE DISK 50P (STAMPS) OR FREE WITH FIRST ORDER

Anglia PD

ALL DISKS ARE NOW JUST £1.10 EACH!

All disks work with the A1200! unless stated

Printed Booklet with details of Hundreds More Disks Just £1.00

(P) = Works on all Amiga Computers including A1200

101 AMOS PROGRAMS PACK (P) — 3 DISKS £3.30
One hundred and one programs and procedures for any version of Amos. An incredible amount of code which can be used in your own programs! Some catagories are: Graphics, General. Scrollers, Games, Demos and Utilities.

101 IMAGINE OBJECTS PACK (P) — 8 DISKS £8.80
For owners of Imagine - one hundred and one ready - made objects! General headings are: Flying, Video, Space, Star Wars, Star trek, Weapons, Household, Fruit, Furniture, Animals, Dr Who and Computers.

HOME MANAGEMENT PACK 3 DISKS (P) — £3.30
Calendar, Mortgage, Spreadsheet, Grammar, Mileage, World Time, Budget, Chequebook, Database, Typing Tutor, Typewriter, Grocery, List Maker, Home Banking.

CLIPART PACKS 1, 2 OR 3 EACH PACK = 5 DISKS — £5.50
3 different packs of 5 disks, all full of the very best clipart for DPaint etc. (P)

PC EMULATOR PACK (P) — 3 DISKS £3.30
Turns your Amiga into a PC! Includes the latest PC task which now gives true VGA Resolution (if you have a 1200) and includes 2 disks of PC Public Domain software.

ELECTRONICS PACK (P) — 4 DISKS £4.40
A collection of excellent programs for any one interested in Electronics. Tronicad - provides you with ready made components so you can quickly create circuit diagrams , Digital Bread Board - build and test Logic Circuits in real time, see exactly what the results will be on screen! Also includes 4 channel Oscilloscope!, Analyzer - Logic Tracer, Galer-Generic Array Logic, Logic Shop - Test Circuits.

ANGLIA CLIPART PACK (P) (NEW) — 5 DISKS £5.50
Brand new IFF clipart produced by Anglia! Loads of high quality anti-aliased IFF images including cats, dogs, birds, wild animals, people and characters. Use with DPaint or any program that accepts IFF graphics.

ASTRONOMY PACK (P) — 4 DISKS £4.40
This superb pack now includes: Star Chart, Amigazer, Total Concepts, Astronomy, Gravity Well, Grav Sim, Orbit, Planet and Fast Facts on the solar system.

DISK EXPERT PACK (P) — 5 DISKS £5.50
If you want to learn more about your Amiga, get this pack! - You'll be a disk expert in no time! Includes Power Packer (Easy file compacter), Sid (Brilliant CLI Replacement Tool!), Iconmania (Change any Icon in seconds), Fixdisk, Viruschecker V5.3, D-Copy (Copies, Repairs, Formats and more), CLI Tutorial (All you need to know) and 202 other utilities!!!

"C" PROGRAMMERS PACK (P) — 6 DISKS £6.60
A complete "C" language and superb instruction manual provide all you need to learn the "C" language, includes North C (2 disks) and the C Manual (4 disks)

MED V3.21 MUSIC PACK (P) — 4 DISKS £4.40
MED is widely recognised as the best music package, PD or otherwise!! This pack contains V3.21, the latest version complete with loads of digital samples, a disk full of MED music scores and some great MED music to load and play! Listen to what your machine is capable of!

CLASSIC GAMES PACK (P) — 5 DISKS £5.50
An incredible collection of superb commercial quality arcade games! Hours of fun for both kids and adults. Includes: Defender, Galaxians, Scramble, Missile Command, Pac-Man, Bi-Planes, Drip!, Space Invaders, Asteroids, Breakout, Tetris + more!

CARD + BOARD GAMES 2 (P) — 4 DISKS £4.40
Another outstanding collection! 38 very good "Thinking" Games!: Chess V2, Backgammon, Blackbox, Towers, Pipe, Zerg, Maze, Connect4, Dominoes, Draughts, Othello, Go Moku, Dragon Tiles, Klondike, Canfield, Mastermind, Wordsearch, Hangman, Pontoon and many more.

COMPUGRAPHIC FONTS PACK 1 (P) — 3 DISKS £3.30
36 Scaleable Compugraphic fonts on 3 disks. They work with Workbench 2 or 3, Pagestream V2+ (on any Amiga), Propage 3+ and Pagesetter V2+. Excellent fonts and great value for money!

HARD DISK PACK 2 (P) — 3 DISKS £3.30
Great collection of the latest hard disk utilities includes HDclick (menu maker), fileminder (directory etc), a backup (superb!), superlock (password protect every drive, mouse and keyboard!!), disk optimizer, copier, virus killer and more!

A1200 PACK (A1200 ONLY) — 3 DISKS £3.30
All of the essential software for your A1200! Includes: Fake Fast MEM, A1200 Run, Degrader, Sysinfo, Viewtek, Plasma, Winblend, Kill AGA, Tetris.AGA and more! Also includes the stunning Lyapunovia.AGA create wonderful patterns and pictures with full AGA support!

PLATFORM PACK (P) — 4 DISKS £4.40
All of the best games in the style of Sonic and Mario Bros. If you like those games then you'll love these ! Includes: Wizzys Quest, Wonderland, Wibblygiddy, Doody, Crazy Sue II, Roach Motel, Son of Blagger and More !!

PRINTER USER PACK 3 (P) (NEW) — 4 DISKS £4.40
Loads of brand new printer programs for 1994! With this pack you can: Print Addresses, print columns (Newspaper style), print banners and disklabels, use every feature of your printer, print booklets and more! Also includes a Stereogram program that prints out 3D images as seen on Tomorrows World!!

HOME BUSINESS PACK (P) — 4 DISKS £4.40
Designed especially for newcomers to business software, this pack contains a database (BBase), spreadsheet, accounts package and Wordprocessor (QED). Also included are a 12,500 word spelling checker and a word statistics program!

HOME BUSINESS MANUAL (P) — £2.99
Approx 50 page professionally printed manual containing full instructions for the Home Business Pack . Includes a specially written guided tour section that takes you through the major features of each program and ensures that you can use each program with confidence!

ARCADE PACK (P) — 4 DISKS £4.40
Our latest collection - The very best Arcade style games in the whole of PD. You'll play these over and over again! Includes: Cybernetix, Hellzone, Galaga, Nebula, Tanx, Defenda, Oblivion, Intruder Alert, Blizzard.

SINGLE DISKS AT ONLY £1.10!

BUSINESS
B321 (P) Amigafox (English Desk Top Publishing)
B322 (P) 600 Business Letters (Superb! - Ready to use)
B327 (P) Text Engine V4 (now the very best wordprocessor with built-in 36,000 word spell checker!)
B335 (P) Forms Unlimited (Design invoices etc, quickly)
B339 (P) A-Graph V2.0 (new version - easy graphs!)
B347 (P) Text Engine V4.1 (Word Processor with faster spell check)
B348 (P) Easy Calc (The best Spreadsheet yet !)
B349 (P) Amiga Diary (Easy To Use Diary)
B350 (P) Word Utils (Crossword Solver, Anagrams and more)

UTILITIES
U437 (P) D-Copy V3.1 (Latest disk copier!)
U478 (P) Typing Tutor (New! Great features)
U495 (P) Virus Checker 6.33 (latest virus killer)
U496 (P) Messysid V2 (Reads and writes PC disks)
U4028 (P) Printer Drivers (Over 100 - Most Star + Citizen models including colour and HP500C!)
U4036 (WB 2/3 only) Kick 1.3 (lets you use WB1.3 software.
U4038 (P) DPaint tutor (easy route to Pro Graphics)
U4043 (P) Superdark (New screen blanker)
U4054 (P) Disk Manager III (the finest disk catalogue prog)
U4057 (P) Engineers Kit (A health check for your Amiga!)
U4065 (P) Pools Wizard (Bang up to date forecaster)
U4068 (P) Spectrum Emulator V1.7 (Works Immediately!)
U4075 (P) Freepaint (Superb Paint Program)
U4078(P) Spectrum Games (More games for the emulator - great!)
U4079(P) Menumaster III (Best floppy menu maker)
U4080 (A1200 only) ASI fix disk 2 (New A1200 utils)
U4082 (A1200 only) HDPREP (A1200 Hard Disk Installer)
U4084(P) CGFONTS (9 New Compugraphics fonts)
U4085(P) Clipart (65 pics of Aircraft 20 of space)
U4086(P) Clipart (45 Fancy borders - V.Good!)
U4087(P) Clipart (149 General Symbols)
U4088(P) Clipart (47 Religious Pictures)

GAMES
G6036 (P) Total War (Perfect version of The Risk board game)
G6042 (P) Super Pacman 92 (the best ever)
G6051 (P) Bridge (Card game - A1200 version included)
G6053 (WB 2/3 only) GNU Chess (Best chess game)
G6056 (P) Cash Fruit (probably the best fruit machine ever!)
G6064 (P) Solitaire Sampler (5 Full Versions of the Card Game !)
G6066 (P) (2 Disks) 18th hole (The best golf game available !)
G6073 (P) Megaball 2.1 (Latest Breakout - V.Good!)
G6074 (WB3 only) (2 disks) Motorola Invaders (AGA Space Invaders)
G6077(P) Road to Hell (Excellent racing game)

CHILDRENS
C712 (P) Colour Pad (New colouring book for youngsters)
C720 (P) Colour the Alphabet (education for 4ys+)
C726 (P) GCSE Maths (Great revision disk)
C727 (P) Top Secret (platform game)
C729 (P) Counting Fun (4+, sums practice)
C730 (P) Wizzys Quest (Wizard, Damsel + Monsters, great game!)
C737 (P) (2 Disks) Mr Men Olympics (very good game)

D140 (A1200 only) Point of sale (A Jaw Dropping show for the A1200)

DESKTOP VIDEO PACK 2 (P) (100%) 4 DISKS — £4.20
Probably our best pack yet! Provides everything to start you off in video. S Movie for Smooth scrolling titles using any font of any size: Showiz for slideshows with loads of wipes and fades: A-Graph for business videos: Shadow Maker to add shadows and smooth any font: Video Librarian: Video Tools: Video Tests: Loads of fonts and more!!

DESKTOP VIDEO PACK 2 INSTRUCTION MANUAL!!! (P) — £2.99
A 50 page instruction manual for DTV pack 2. Professionally printed, contains instructions for all the programs in the pack and a section on fonts and how to use them! Also includes a superb guided tutorial that takes you through the major programs step by step, letting you create your own titles as you go! Designed for beginners and experienced users, this manual will make desktop video easy!

FRED FISH CATALOGUE DISK 350 TO 910 JUST 70P

FULL CLR RANGE IN STOCK ! SEE PRINTED BOOKLET FOR DETAILS

HIGH QUALITY HARDWARE

8mm High Quality Mouse Pad	£2.99
Amiga 500/500+/600/1200 Dust Covers	£3.99
Phillips 8833 Monitor Dust Cover	£4.99
3.5" Disk Drive Cleaning Kit	£2.99
Blank Disks (high quality with labels)	£0.50

ANGLIA PUBLIC DOMAIN LIBRARY
(Dept ASH), 30 Victoria Street, Felixstowe IP11 7EW

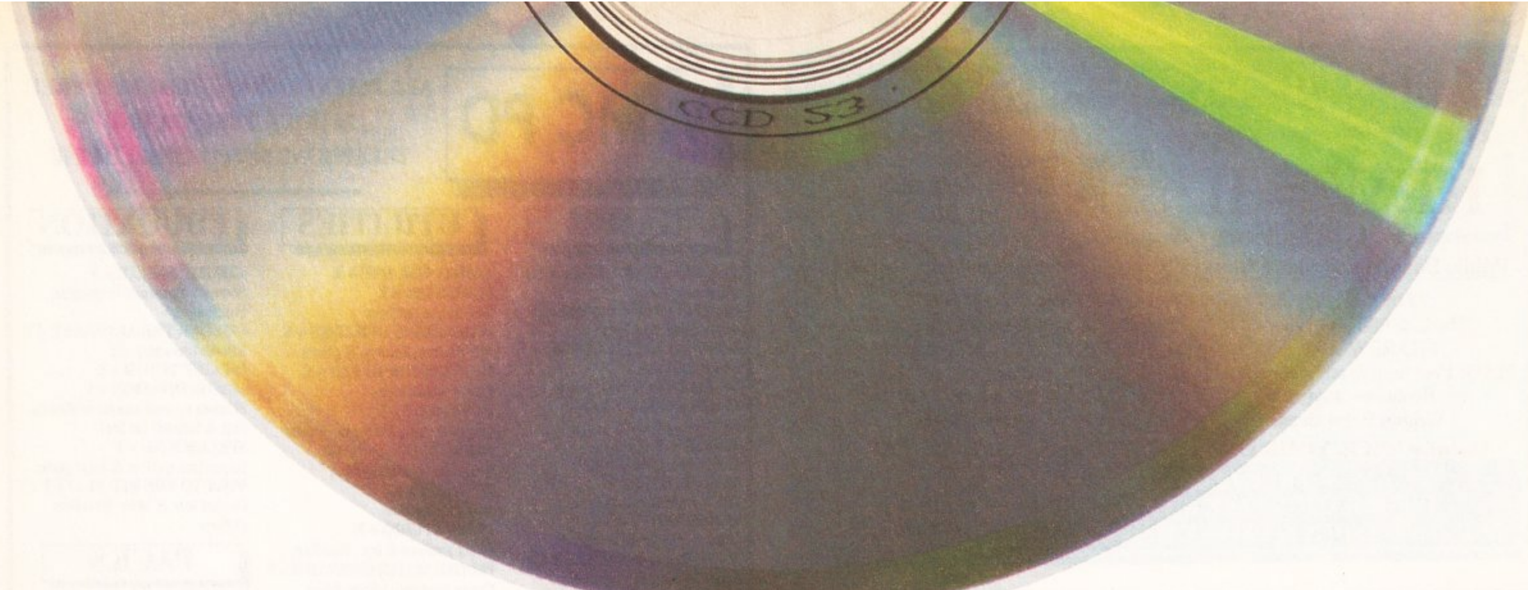
Access VISA Switch

International orders welcome but please add 30p per disk for post & packing.

CREDIT CARD ORDERS

PHONE 0394 283 494

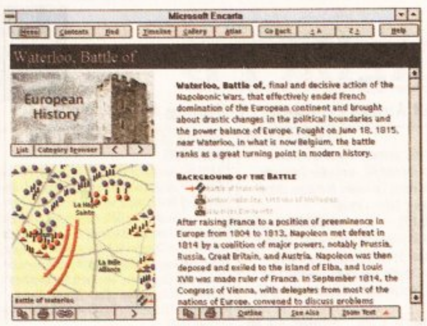
PHONE WITH CREDIT CARD OR SEND CHEQUE/PO (PAYABLE TO A.P.D). PLEASE ADD 70P (PER TOTAL ORDER) FOR P&P.



Feed your brain.



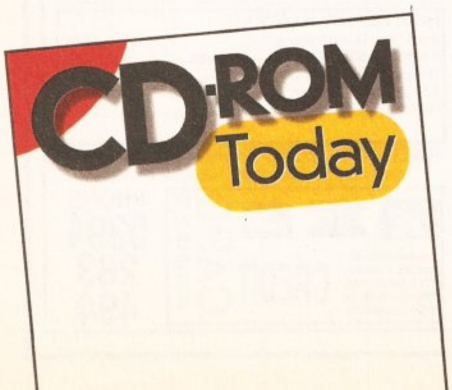
Educate.



Inform.



Entertain.



We'd like to help you explore the amazing new world of CD-ROM for the Mac and PC.

Our magazine, complete with 600Mb disc, is out on March 31st – Easter weekend. See you then!

Future PUBLISHING

GVP WORLD CLASS AMIGA PERIPHERALS

NEW PRODUCTS

RETURN THE COUPON FOR 64-PAGE AMIGA GUIDE

VIDEO GENLOCK
FOR ALL AMIGAS



This extremely high quality Amiga genlock, from GVP, has an intuition-based software control panel with full ARexx and command line interfaces. Easy to use, the G-Lock genlock features many sophisticated attributes among which are:

- *Two Composite Video Inputs or S-Video (Y/C) Input*
- *Simultaneous Composite & S-Video and RGB Output*
- *Video Processor - Real Time Software Control of Video Attributes (Sharpness, Gain, Brightness etc)*
- *ARexx Compatible*
- *Works with Flicker Fixers*
- *Multiple Keyer Modes*
- *Full Audio Support*

AMIGA FORMAT GOLD 94%

G-LOCK ~~£349~~ **£299** INC VAT - VID 2500

NEW 40MHz & 50MHz ACCELERATORS
FOR AMIGA 1200



- *40MHz 68030EC and 50MHz 68030 Accelerator*
- *Unique Feature Connector for Module Expansion*
- *Built-in Memory Management Unit on 50MHz Version*
- *Optional 60ns 32Mb RAM Upgrade*
- *Battery Backed Clock*
- *Optional 40MHz or 50MHz 68882 Maths Co-Processor*
- *Sophisticated Memory Management and Cache Control Software*
- *Kickstart Remapping Technology*

TOP RATED — CU-Amiga Feb '94 97%

The new GVP A1230-II, available in 40MHz 68030EC and 50MHz 68030 configurations, are the most advanced accelerators yet for the A1200. They can make your Amiga run 6½ times (40MHz version) or 8½ times (50MHz version) faster than the standard A1200.

MMU OR FPU?
The 50MHz version includes a built-in Memory Management Module (MMU), for more sophisticated memory control. An optional FPU (Floating Point Unit: for faster maths calculations) is available for the 40MHz version (see below) and 50MHz version (call for price), both have RAM upgrade options (up to 32Mb, see below).

UNIQUE MODULE EXPANDABILITY
The A1230-II is unique in that you can add further functionality to your Amiga by using expansion modules. GVP will be releasing a wide range of optional modules, the first being a high speed SCSI-2 interface. A 16-bit sound sampler and real time frame grabber will follow shortly. All modules can be fitted without invalidating the Amiga's warranty.

RAM UPGRADES
The A1230-II accelerator combo has two 32-bit SIMM sockets for easy Fast RAM expansion. The following SIMMs can be used in this slot.
- 1Mb 60ns Fast RAM SIMM - (RAM 3216) - £69 inc VAT
- 4Mb 60ns Fast RAM SIMM - (RAM 3246) - £199 inc VAT
- 16Mb 60ns Fast RAM SIMM - (RAM 3286) - £1299 inc VAT

SCSI-II EXPANSION MODULE
- *A1291 - Fastest SCSI Controller Yet*
- *DMA SCSI Design*
- *FaaaST ROM Controller*
- *High Speed, Unique DPRC Technology for Direct HD to Memory Transfer*

A1230-II SCSI EXPANSION MODULE **£79** inc VAT - UPG 1600

A1230-II PROCESSOR ACCELERATOR

40MHz 68030EC NO MMU			
NO FPU			WITH 40MHz FPU
0Mb RAM	4Mb RAM	8Mb RAM	4Mb RAM
£249 inc VAT - UPG 1240	£449 inc VAT - UPG 1244	£649 inc VAT - UPG 1248	£549 inc VAT - UPG 1246

40MHz 68030EC NO MMU			
NO FPU			WITH 50MHz FPU
0Mb RAM	4Mb RAM	8Mb RAM	4Mb RAM
£379 inc VAT - UPG 1500	£579 inc VAT - UPG 1540	£779 inc VAT - UPG 1580	£679 inc VAT - UPG 1545

24-BIT GRAPHICS CARD
FOR A1500/A2000/A3000/A4000



EGS Spectrum is the answer to all your 24-bit graphics card requirements. It is a high performance, high resolution, 24-bit board that will take any Amiga 1500, 2000, 3000 or 4000 beyond AGA! But the hardware is only half of the picture. Without quality software, your investment will be wasted. Not only does GVP's own award winning graphics application ImageFX fully support EGS Spectrum, but also, using a Workbench driver, nearly all existing Amiga Workbench compatible applications will also work on and support the EGS Spectrum system.

- *1Mb or 2Mb of On-board Memory* — *2Mb gives, higher resolutions & more colours (1030x768 Vs 1600x1280)*
- *On-board Hardware BLITTER*
- *Future Re-targetable Graphics Support*
- *Zorro II or Zorro III Autosensing*
- *Scan Rates up to 80KHz*
- *80,000,000 Pixels/sec Pixel Display Speed (8-bit)*
- *Programmable Display Resolution 320x200 to 1600x1280*
- *Supports Data Transfer Rates up to 12Mb/sec on Zorro III Systems*

EGS SPECTRUM	
1Mb RAM	2Mb RAM
NEW! £349 INC VAT - VID 7310	NEW! £399 INC VAT - VID 7320

HARD DRIVE CARD
FOR A1500/A2000/A3000/A4000



The HC8+ is a high speed hard drive and RAM card which can also be used to increase your Amiga's RAM by up to 8Mb RAM.

A FULLY FEATURED SCSI INTERFACE FOR A4000s

- *High Speed DMA SCSI Controller Can Handle up to 7 Devices*
- *Ultra Fast Access SCSI Hard Drive Option - See Below*
- *Supplied Unpopulated the HC8+ can be Upgraded to Give You up to 8Mb of FAST RAM - See Below for Details*
- *Direct Memory Access Style Design for Top Speed Transfer*

HC8+ HARD DRIVE CARD		
0Mb HD	42Mb HD	120Mb HD
—	~~£279~~	~~£389~~
£129 INC VAT - HAR 1300	£199 INC VAT - HAR 1340	£299 INC VAT - HAR 1422

RAM UPGRADE CARDS
GVP HC8+ INCLUDES 8 SIMM SOCKETS FOR EASY INSTALLATION OF FAST RAM. THE HC8+ WILL ACCEPT 2, 4, 6 or 8Mb USING 2, 4, 6 or 8 SIMMS
1Mb SIMM **£39.95** EACH INC VAT - MEM 3628

8-BIT SOUND SAMPLER
FOR ALL AMIGAS



Capture sound from an external source and play it back in stereo or mono on your Amiga. The latest version of GVP's Digital Sound Studio (DSS8+) enables you to create audio effects for use in games or jingles.

- *New Style High Impact, Clear Poly-Carbonate Casing*
- *Simultaneously Holds up to 31 Sound Samples in Memory*
- *Real-time Oscilloscope, Spectrum Analysis, Echo & Reverberation*
- *AREXX Compatible*
- *Microphone Input*
- *.MOD File & MIDI Compatible*
- *FREE Samples Disk*

DSS8+ **£69** INC VAT - MUS 2510

ACCELERATORS
FOR AMIGA 1500 & 2000



FAST! 32-bit TECHNOLOGY

GVP offer a range of A1500/A2000 accelerators that simply outstrip the competition for speed and specifications.

SPECIAL OFFER SAVE £135! 42Mb QUANTUM HARD DRIVE + MOUNT KIT HAR 2043 ~~£234~~ **£99** INC VAT
ONLY WHEN PURCHASED WITH G-FORCE ACCELERATORS SHOWN BELOW

G-FORCE ACCELERATORS	030 40MHz	040 33MHz
Speed MIPS*	12.1	30
Processor	68030EC	68040
Maths Co-Pro.	68882 included	In 68040 processor
Std 32-bit RAM	4Mb	4Mb
Max 32-bit RAM	16Mb	64Mb
Extras	SCSI	SCSI Ser/Par
PRICE	£599 INC VAT - UPG 0430	£999 INC VAT - UPG 0740

*MIPS: Millions of instructions / second, a normal Amiga runs at .67 MIPS

PLUG-IN HARD DRIVE
FOR THE AMIGA 500 & 500PLUS

+ RAM EXPANSION TO 8Mb



The A500 HD8+ provides the ultimate in hard drive performance, it can also increase the memory of your Amiga by up to 8Mb, support up to six SCSI devices and provide PC compatible emulation via its custom expansion slot (mini slot) see below.

"Without doubt the best hard drive available for the A500 ..."
Amiga Format April '93

AMIGA FORMAT GOLD 92% — BLUECHIP AWARD

COMPARISON CHART

FEATURES/MODEL	GVP HD8+	ICD TRIFECTA LX	COMMODORE A590 20Mb	EVESHAM REFERENCE 100
*TRANSFER RATE: Kb per second	1066	1028	564	400
GVP DESIGNER STYLING	✔	-	-	-
RAM EXPANSION(MAX)	8Mb	8Mb	2Mb	4Mb
MINI SLOT (FOR FUTURE EXPANSION)	✔	✔	-	-
SCSI INTERFACE	✔	✔	✔	✔
GVP PERFORMANCE Faaast ROM	✔	-	-	-
DEDICATED POWER SUPPLY	✔	✔	✔	-
PRICES FROM	£199	£295	£149	£329

*Figures taken from *Amiga Computing*, October 1993

HD8+ 42Mb HD, 0Mb RAM	HD8+ 120Mb HD, 0Mb RAM
PREVIOUS PRICE ~~£249~~ — **£199** INC VAT - HAR 0840	PREVIOUS PRICE ~~£399~~ — **£299** INC VAT - HAR 0922

PC EMULATOR
FOR USE WITH HD8+ or A530
PLUGS INTO THE HD8+ OR A530 TO ALLOW YOU TO RUN PC COMPATIBLE SOFTWARE ON YOUR AMIGA

286-16MHz EMU 0500 **£99** INC VAT

IMAGE PROCESSING
FOR ALL AMIGAS WITH 4Mb RAM

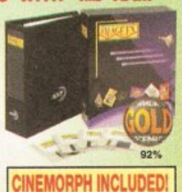


Image FX is a complete solution for all your image creation and editing needs. It has a vast range of facilities, can read and write to many other different file formats and directly controls a wide variety of hardware.

- *24-bit Painting*
- *ARexx Compatible*
- *Virtual Memory Support*
- *Load, Save and Convert to the Following Formats: ANIM, BMP, Clipboard, DCTV, DPIIE, GIF, HAM-E, ILBM, IMPULSE, JPEG, RENDITION, SCULPT, TARGA, TIFF AND MORE*
- *Scanning, Framegrabbing & 24-bit Board Support* — *Comes with Modules for Several Popular Hardware Devices: JX100, IV24, AGA/AA Chipset*
- *Create Animations*
- *Numerous Special Effects* — *Edge Feathering, Shading, Alpha Channel, Morphing, Compositing etc*

AMIGA FORMAT GOLD 92%

CINEMORPH INCLUDED! SEE DETAILS BELOW

Promo Price, originally £269.95
IMAGE F/X **£199.95** INC VAT - ASI 2002

VIDEO EFFECTS
FOR ALL AMIGAS WITH 3Mb RAM



CineMorph from GVP opens up the world of Morphing, the process of converting one image to another to create dazzling special effects. Currently very popular in music videos and feature films, morphing has become the fashionable video effect to use. Now with CineMorph you can create these stunning effects on your Amiga.

- *Supports the AA Chipset*
- *Static or Full Motion Morphing*
- *Single Image Warping*
- *Fast Render Times*
- *Renders to HAM-E and DCTV*

Promo Price, originally £99.95
CINEMORPH **£24.95** INC VAT - ASC 4422

16002401/4

THE SILICA SERVICE

SILICA 1978 1993 15 YEARS SERVICE TO YOU

Before you decide when to buy your new Amiga products, we suggest you think very carefully about WHERE you buy them. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or help and advice. And, will the company you buy from contact you with details of new products? At Silica, we ensure that you will have nothing to worry about. We can meet our customers' requirements with an understanding which is second to none. Complete and return the coupon now for our latest FREE literature and begin to experience the "Silica Service".

- *FREE OVERNIGHT DELIVERY:* On all hardware orders shipped in the UK mainland.
- *TECHNICAL SUPPORT HELPLINE:* A team of technical experts will be at your service.
- *PRICE MATCH:* We match competitors on a "Same product - Same price" basis.
- *ESTABLISHED 15 YEARS:* We have a proven track record in professional computer sales.
- *PART OF A £50M A YEAR COMPANY* With over 200 staff - We are solid, reliable and profitable.
- *BUSINESS + EDUCATION + GOVERNMENT:* Volume discounts are available. **Tel: 081-308 0888.**
- *SHOWROOMS:* We have demonstration and training facilities at all our stores.
- *THE FULL STOCK RANGE:* All of your requirements are available from one supplier.
- *FREE CATALOGUES:* Will be mailed to you with special offers and full details of hardware, peripherals and software.
- *PAYMENT:* We accept most major credit cards, cash, cheque or monthly terms (APR 29.8% - written quotes on request).

SILICA

HOT LINE 081-309 1111

SILICA IS A DIVISION OF PRODIS PLC

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-309 1111**
Order Lines Open: Mon-Sat 9.00am-7.00pm (Sat 9.00am-5.30pm) No Late Night Opening Fax No: 081-308 0608

CROYDON SHOP: Debenhams (2nd Floor), 11-31 North End, Croydon, Surrey, CR9 1RQ **Tel: 081-688 4455**
Opening Hours: Mon-Sat 9.00am-6.00pm Late Night: Thursday - 9pm Fax No: 081-686 4658

ESSEX SHOP: Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA **Tel: 0702 468039**
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) Late Night: Thursday - 7pm Fax No: 0702 468039

IPSWICH SHOP: Debenhams (2nd Floor), Waterloo House, Westgate St, Ipswich, IP1 3EH **Tel: 0473 287092**
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) Late Night: Thursday - 9pm Fax No: 0473 287092

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA **Tel: 071-580 4000**
Opening Hours: Mon-Sat 9.30am-6.00pm No Late Night Opening Fax No: 071-323 4737

LONDON SHOP: Selfridges (Basement Arena), Oxford Street, London, W1A 1AB **Tel: 071-629 1234**
Opening Hours: Mon-Sat 9.30am-7.00pm Late Night: Thursday - 8pm Extension: 3914

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-302 8811**
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday - 7pm Fax No: 081-309 0017

To: Silica, AMSHP-0494-68, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME A 64 PAGE AMIGA COLOUR CATALOGUE

Mr/Mrs/Miss/Ms: .... Initials: .... Surname: ....

Company Name (if applicable): ....

Address: ....

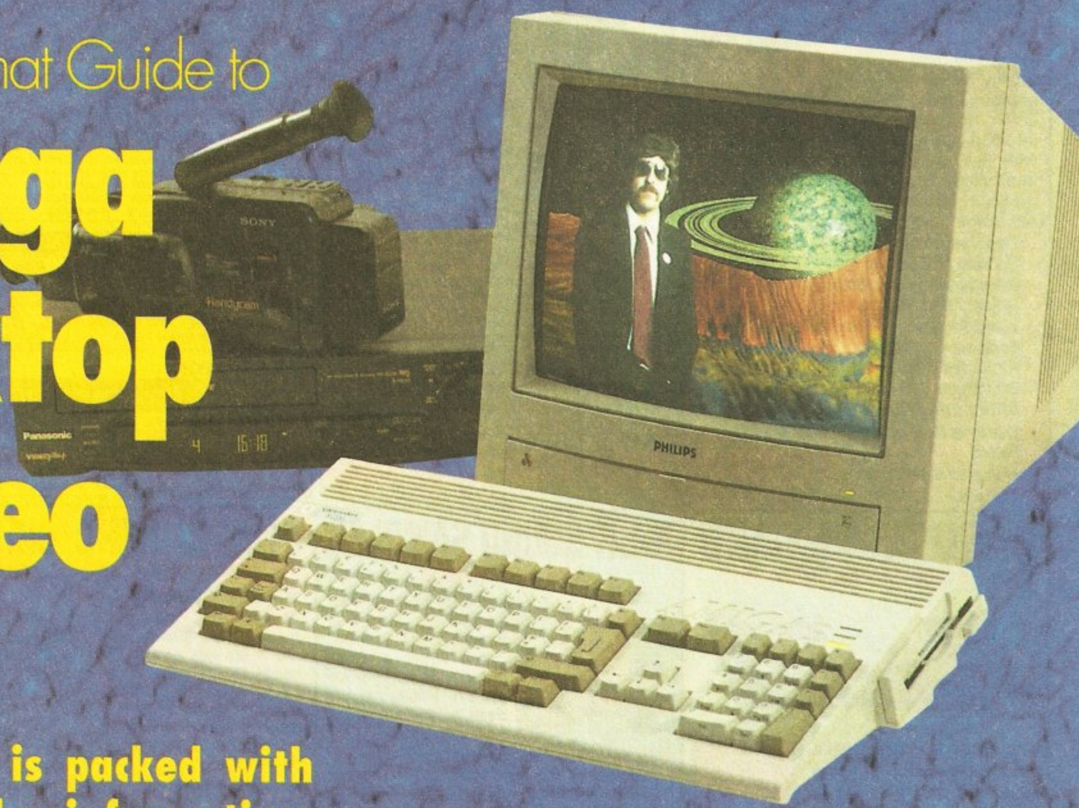
....

.... Postcode: ....

Tel (Home): .... Tel (Work): ....

Which computer(s), if any, do you own? 68AB

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.


SONY
Panasonic
PHILIPS

PRODUCT LOCATOR

SysInfo 3.11	Fred Fish	–	Latest version of system analyzer	26	*****
ToolsDemon	Fred Fish	561	Run programs for 2.0 Tools menu	11	****
Touch typing tutor	NBS	CLU03	Teach yourself touch typing	17	****
Track Display	GTS	Utils1	Shows position of drive heads	10	***
Twilight Zone	Fred Fish	782	After Dark-like screen blanking utility	24	*****
UnixDirs	Fred Fish	Fish 850	Unix-like directory movement	27	*****
VCR Tape Filer	Fred Fish	721	Organise your video collection	20	***
VirusZ	Fred Fish	786	Virus Killer	26	*****
WordFinder-Plus	Virus Free PD	Licenseware	Crossword puzzle solver	21	****
Words 3	AmigaNuts		Solve anagrams	9	***
X-Stitch	Deja Vu	Licenseware	Pics to knitting patterns	19	****
XSearch	Fred Fish	804	File searching utility	26	***

COMMS UTILITIES

All 1.35	fred Fish	825	Intuition-based archiving toll	27	****
BBBBS	Fred Fish	729	Bulletin Board System	20	****
LHA 1.11	Fred Fish	593	Archiving utility	13	****
NComm	17Bit	1275	Terminal Program	7	****
Phone Line Watcher	TBAG	58	Keep track of phone bill	9	****
Term 3.1	Fred Fish	Fish 831-833	Best Amiga comms program available	27	*****

PROGRAMMING UTILITIES

Acc Assembler	AmigaNuts	–	Fast Assembler	6	*****
Amiga E	Fred Fish		Programming language compiler	26	****
Amiga Pascal	Fred Fish	Fish 849	Amiga version of Pascal language	27	****
BRef	Fred Fish	494	BASIC cross referencing utility	9	****
Copper Master	AmigaNuts	1083	Generate Copper Lists	5	***
DICE	Fred Fish	443	C Compiler	3	*****
DPU	Fred Fish	721	Hex disk and file editor	20	****
Frac	AmigaNuts	1251	Adventure game creator	18	****
GadTool Box	Fred Fish	Fish 731	Create Intuition font ends	22	*****
ICalc	Fred Fish	Fish 742	Brilliant Shell-based calculator	22	*****
MIDI Library	Fred Fish	227	Program MIDI applications	9	*****
Map Editor	AmigaNuts	–	Map editor for AMOS	19	****
MegaEd	Fred Fish	Fish 743	Powerful text editor	22	*****
MemSnap	Fred Fish	Fish 826	Trace lost allocated memory pools	27	****
MinTerm	Fred Fish	Fish 560	Calculate blitter minterms	28	****
NorthC	AmigaNuts	1112	C Compiler	6	****
PCQ Pascal	AmigaNuts	1113	Pascal compiler	6	****
Power Logo	EdLib	24	Enhanced Logo Interpreter	9	***
Remm and Rams	Deja Vu	Licenseware	Map editor and scroller utilities	17	***
Stripit	Fred Fish	Fish 750	Strip comments from ascii source code	22	****

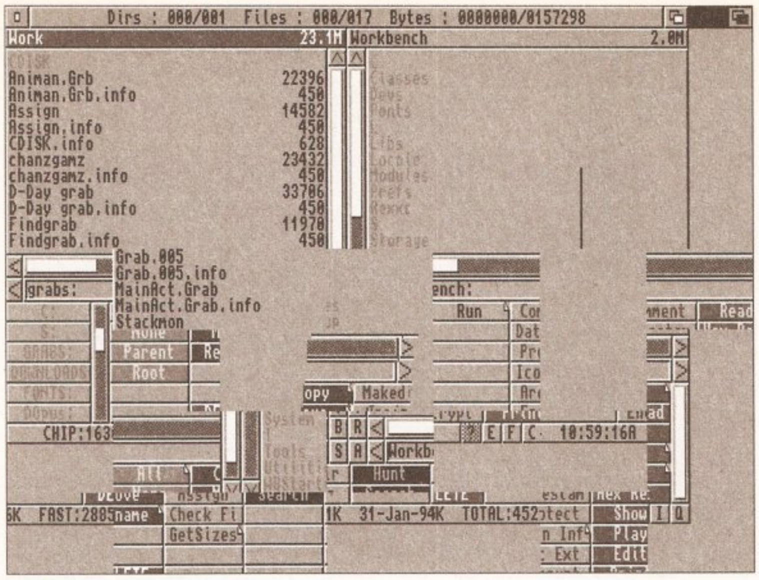
GRAPHICS UTILITIES

3D Objects Disk 1	AmigaNuts		Collection of Sculpt Objects	8	****
3DFont	17Bit	1007	Text to Sculpt Object	3	***
AMOS Paint	Deja Vu	83	Paint package	3	***
BezSurf 2	Fred Fish	315	Create shaded 3D objects	10	***
CMDemo	Fred Fish	Fish 757	Demo of ASDG's CineMorph	23	***
Converters	17Bit	1221	Image conversion tools	9	***
DPaint Tutorial	Soft Express	U160	Comprehensive DPaint tutorial	22	*****
Deluxe Draw	Slipped Disk	18	Paint package	3	**
Desktop video pack 2	Anglia PD		Various DTV utilities inc titler	17	***
DrawMap	Fred Fish	315	Generate maps of the world	10	***
FracScape	Various	–	Fractal landscape generator	18	*****
HAMLab	AmigaNuts	1149	Image processing	3	**
ImageLab	PDSoft	V518	Image processing program	12	****
LandBuild	AmigaNuts	1190	Fractal landscape generator	9	**
Mandel Mountains	Softville	751	Creates 3D Mandelbrots	5	****
MapTrix	Fred Fish	Fish 853	Fractal texture mapping utility	28	*****
PictSaver	Fred Fish	543	Grab screens in IFF Format	9	*****
Plasma	Fred Fish	573	Fast fractals program	11	***
SkyPaint	TBAG	37	Text-based graphics	3	***
SlideShow Kit	VirusFree	1465	Create your own slideshows	3	****
SpectraPaint	Slipped Disk	19	Paint package	3	****
Sprite Designer	AmigaNuts	1102	Create animated sprites	6	**
Vector Designer	AmigaNuts	–	Vector graphics designer	9	**
Video Text Displayer	AmigaNuts	1199	Basic text scroller	9	***

EDUCATIONAL SOFTWARE

4 Stroke Engine	PD Soft	V738	Demonstrates 4 stroke engine	19	****
CPK	Fred Fish	809	Create rendered molecule illustrations	26	****
Complete Bible	PD Soft	V715-717	Complete Bible on three disks	19	****
Constellations	Astronomy News	–	Info on stellar constellations	20	***
Drafu	fred Fish	Fish 854	Function plotting utility	28	***
JigMania	Deja Vu	LPD13	Maths/Logic	5	****
Learn&Play	Riverdene	Mis637	Maths/Reflex/Logic	5	****
MathPlot	Fred Fish	Fish 850	Mathematical function plotter	27	****
Maths Reflex	Anglia PD	C728	Test your maths	20	****
Maths4Fun	AmigaNuts	1146	Maths	9	****
Quingo	Deja Vu	LPD21	3 'R's	5	***
Runes	DTP	OS125	Mystic runes explained	18	***
Shapes	Riverdene	GAM907	Maths/Logic	5	****
Simon	Deja Vu	APD135	Reflex/Memory	5	***
Space Maths	Deja Vu	APD135	Maths	5	****
Spell4Fun	AmigaNuts	1146	Spelling	9	****
TouchStones	Deja Vu	LPD18	Logic	5	****
Treasure Search	Deja Vu	APD2	Maths/Logic	5	***
WarBook	Asgard Software	Freeware	History of World War 2	21	***
ChemBalance	Fred Fish	Fish 759	Balance chemical equations	23	****
XTables	AmigaNuts	1146	Maths	9	*****

FOR SUPPLIER INFORMATION ON ALL THE PRODUCTS LISTED ABOVE SEE UK PD HOUSES PAGE 104



BBlitz's Tile module in action.

commands. It does this by making use of the public domain **voice.library** and a sound sampler. *Animan* is completely multitasking so you can talk to it even while running other programs, but unfortunately you will need Workbench 3.0.

There's also yet another *ZX Spectrum Emulator* on the disk. This one has several versions, including a 68020 and above optimised version, and an incredibly risky-but-fast special version. There are also one or two other useful and curious programs on the disk.

Product Value 6/10

FIND IT V1

CLR (Disk number CLU 037)

If, like me, you're one of those people who are continually losing files on their hard disk, then this program will save your hours of wading through directories. *Find It V1* will not only find your missing document or programs, but will also read, animate, display or execute them. You can, if you'd like, configure *Find It* to display different file types by selecting its icon in Workbench and then adding your favourite module player or picture displayer as a new tooltype.

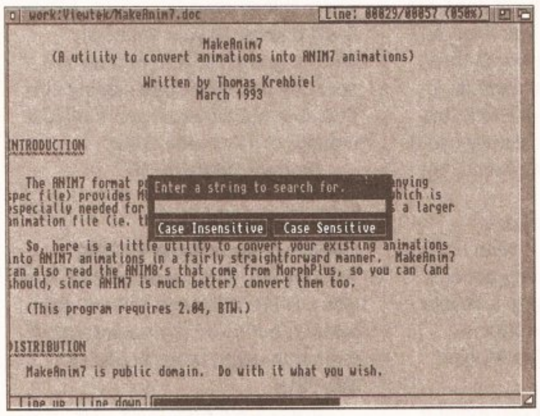
Find It's features are only really matched by commercial packages such as *Directory Opus* and is well worth taking a look at. It also has on-line help and is fully multitasking. You can get it from any CLR stockist, such as Blitterchips.

Program rating 9/10

BBLITZ

PD Soft (Disk number V1221)

There is an already large number of screensavers circulating in PD circles and *BBlitz* is set to join the ranks. As



Xmore has a good search facility to help you find what you are looking for in a document.

with most screensavers, *BBlitz* displays a short animation after a predetermined period of inactivity. *BBlitz* does its job effectively, but unfortunately it's not particularly amusing, nor does it have anything new to offer and is generally not as good as Twilightzone.

Program rating 5/10

DIGITAL DISK ISSUE 3

You'd be excused for groaning: "Oh no, not another disk mag." However, *DIGITAL DISK*, unlike most disk mags, does not consist entirely of a list of who's cracked what game, which demo writing team is the most popular, or even a two-hour-long scrolling list of hellos. What it does contain is some excellent editorial sections and some reviews of serious software and games.

The magazine comes on two disks, has a well-drawn interface, a choice of music modules and some pictures to view. This issue the editorial sections covered, among other things, the Amiga's use in *Deep Space 9* and *Babylon 5*. It also covers last year's Future Entertainment Show and even the release of one or two records. All in all, it makes a change from the standard fare. It can be obtained for £2.50 from DIGITAL DISK Publishing, 70 Donald Drive, Chadwell Heath, Romford, Essex, RM6 5DU.

Product rating 9/10

IMAGINE OBJECTS AND TEXTURES COLLECTION

17 Bit (collection of 7 disks)

If this month's 3D special has whetted your appetite for 3D objects and textures, then you might find this collection of interest. The textures have been JPEGed and, as a result, 17 Bit have managed to fit well over 100 files covering stone and other surfaces.

The objects are of varying quality and cover a variety of subjects from spaceships to violin cases. The Enterprise pops up a couple of times, both in the form of Carmen Rizzolo's huge 1701D model (which needs vast amounts of memory to render) and the 1701A from the original TV series. There are also a couple of human figures; a girl in a swimming costume, and Al, a gangster-like figure who you may have seen before. This last object points to what is perhaps the collection's downside. Although the disks are archived and therefore contain loads of files, they do contain a number of objects that are pretty common. However, the sheer size of this pack does make it quite good value for money, even though some of the objects are available elsewhere.

Product rating 7/10

ASSASSINS'S FIXDISK VOL. 2

Roberta Smith DTP

One of the most annoying things any user of a new Amiga can encounter is incompatibility. This is the second of the *Assassins'* attempts at making this frustrating occurrence less frequent. There are several fixes on this disk, from games to monitors.

ForceVGA will enable the use of a standard PC VGA monitor with most serious software. But be warned, some of the screenmodes applications use can seriously damage your monitor.

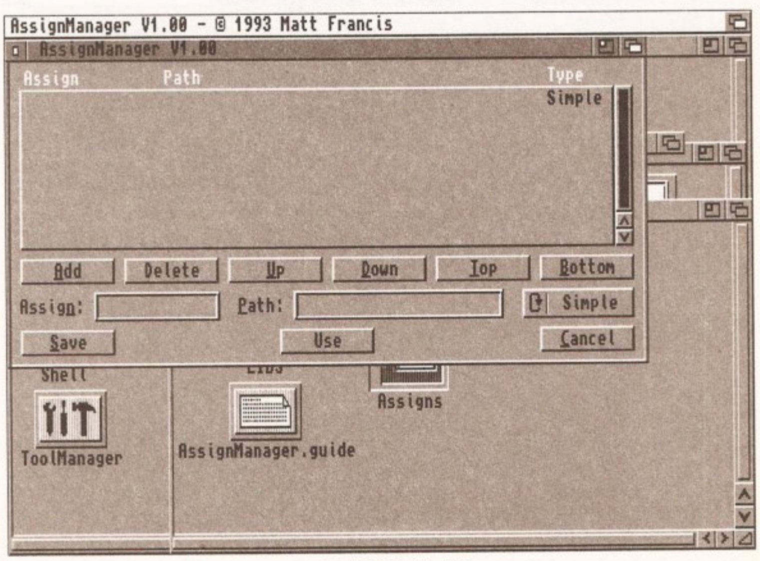
KillAGAV2 is the second incarnation of the popular program that fools your applications into thinking you have a non-AGA chipset.

RunPAL stops the irritating screen corruption, and subsequent crashing of your machine, that can sometimes happen when you start some older programs from Workbench in a different screenmode than the program requires. *RunLame* is Workbench 3.0 equivalent.

Shutup is perhaps the most stress-relieving utility in this collection. It will stop that horrible clicking sound your Amiga's floppy drive makes when there's no disk present.

SKick is another program that attempts to provide greater compatibility through emulation of a different Kickstart. *SKick* differs from most other emulators in that it can emulate several Kickstart versions.

The disk also contains a few



Keep those assigns under control with AssignManager.

GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed in these pages, or if you've got any other comments or suggestions, write to Graeme Sandiford c/o *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact Graeme on the electronic bulletin board as 'amshopper'.

other tools and commodities, as well as game fixes for *Mega-lo Mania*, *R-Type* and *Power Monger*.

Product value 7/10

VARK CLI UTILITIES DISK VOL 3

Roberta Smith DTP

This disk is positively stuffed to the gills with software. Although some of its contents have more curiosity value than serious applications, you'll undoubtedly find something of interest on this disk.

One of the more serious tools on this disk is *MPV103*. It's an **MPEG** (Motion Picture Experts Group) viewer. **MPEG** is similar in principle to the **JPEG** (Joint Photographic Experts Group), but instead of compressing a single picture, it compresses several frames of an animation. Unfortunately the format needs huge amounts of processor power to decompress the frames at a respectable rate. As this is a software version, the viewer is very, very slow, even on a butch A3000 or A4000. New features in version 1.03 include AGA support and an option to separate **MPEG** files into individual IFF pictures.

Crunch-o-matic is yet another packer. Its claim to fame is its optimised routine for IFF pictures and samples.

DSound is an IFF sample player that will allow you to play the samples back directly from hard disk.

Error will not only tell you what the different error codes mean, it will also give suggestions on how you might remedy the problem.

There must be a reason for the popularity of 8-bit emulators. Perhaps it's just nostalgia. Whatever it is, here's another one, a Gameboy emulator. The point of a Gameboy emulator that doesn't shrink your Amiga to a portable size evades me. But I'm sure there are one or two sad individual who might actually enjoy using it.

Here's a rather useless program, a *Mousometer*. Yes that's right, it measures how far your mouse has travelled across your desktop. What's more, it measures the distance in kilometres. If it were in miles it might be considered useful.

PowerMenu is another Workbench replacement.

Scruncher is a packer that claims to give better compression ratios than *Power Packer*.

STP will play your music modules through a CD player-like interface.

Xmore is a viewer with a search function.

This disk also contains *S_Anim5*, mentioned earlier and *S_Pic* which creates self-viewing pictures. All in all, this disk provides excellent value for money

Product rating 9/10

ORGANISED!

Magnetic Fields (Disk BU004)

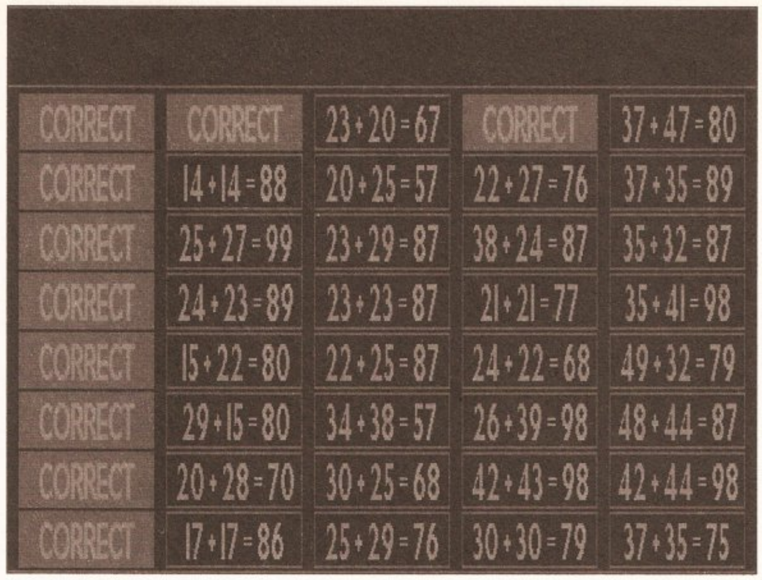
Life in the 1990s is a hectic affair, especially as Filofaxes have gone out of fashion. So how can you keep up? Well, you could do a lot worse than getting *Organised! Organised!* is, in effect and appearance, a Filofax on your Amiga (so you can happily use it in the privacy of your own home, to avoid ridicule).

It has calendar, diary and addressbook sections. It even has a search feature and printing options.

The disk also contains a couple of other useful, and sometimes brutally honest, tools: *The Money Program* and *HouseInv*.

Using *HouseInv* you can make a database of the contents of your house for insurance purposes. The last package is also very good at helping you organise yourself. *The Money Program* is a financial organiser that will keep the details of several accounts, groups and transactions. You can also make budget comparisons and leave yourself reminders that will be scrolled across the screen the next time you run the program. The account graph, however, is the point where things start to become painful. It will display all your financial details, complete with horribly red sections and downward-sloping bits. Still, it is not so bad if you turn your monitor or TV upside down.

Product rating 9/10



Dust off some mental cobwebs and test your mathematical reflexes.

WB 3.0 UTILS 7

PD Soft (Disk number V1228)

The majority of the programs on this disk will be of interest to hard disk owners, but there are several other tools that might prove useful to everyone.

If you are a hard drive user, you will no doubt be cheesed off with the number of assigns cluttering your system. There are a couple of utilities in this collection to keep track of them. *AssignManager* has been designed as a prefs editor, so installation is a simple matter of tucking it away in your prefs drawer and altering your startup sequence. Once you've done that, creating, editing or removing an assign is simply a matter of clicking on a button. *Assignprefs* is basically the same as it combines all of your assigns into a single file.

Pickstartup is also of more interest to hard disk users. As the name suggests, you can use this program to select a startup sequence of your choice by either clicking your mouse's right button, or pressing F1 when your machine is booting up.

Of more general interest is *Report*. This handy little tool will generate bug reports, compatibility reports and enhancement requests.

One the best inventions of the last twenty years has to be the Post-It note. *Stickit* is the computer equivalent. You simply enter your reminders and when you turn your Amiga on next, they will pop-up.

Enforcer37 will check your memory for illegal accesses.

System Friend is a password protection program written in AMOS. It's accompanied by another friend: *The Friendly Module Player*, also written in AMOS. *The Friendly Module Player* will simply play your modules, in a friendly manner of course.

Product value 7/10

CHANNEL Z ISSUE 2

Magnetic Fields (Disk A1229)

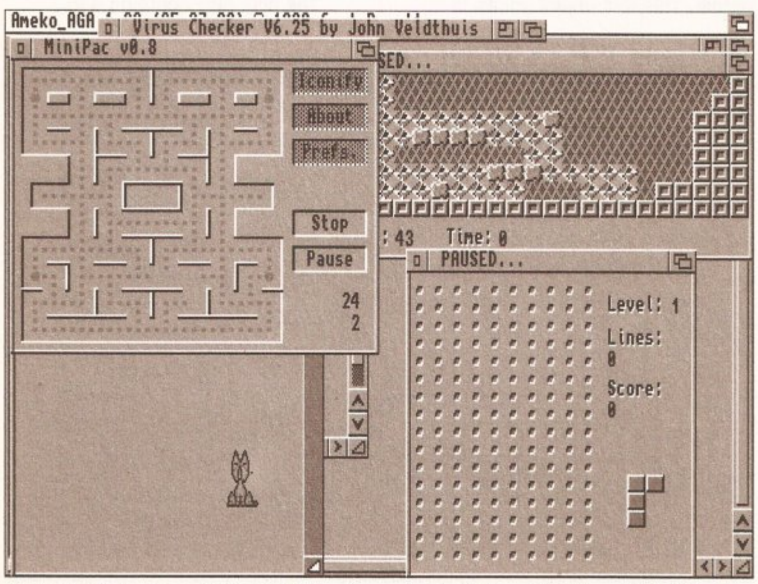
Issue two of the only Amiga 1200 magazine has another wide selection of reviews, utilities and games. This month the editorial section focuses on piracy again, as well as the problem of viruses. There is also fair coverage of the CD32 console.

The magazine's *Review* section has some interesting PD reviews and a large selection of games is rated.

This issue is a little short on utilities due to an absence of new AGA programs. However, *KillAGA*, *Virus Checker 6.30*, *DCopy* and *AmekoAGA* are included on the disk.

There are also a few workbench games. These include *Tetris*, *Boulder*, *Dog Boxman* and the brilliant *MiniPac*. The magazine is quite a good read and contains a fair amount of good software.

Product rating 8/10



Here are just a few of the desktop games included on the channel Z disk

MAGNUMV1.9

Roberta smith DTP (Disk UT605)

If you would try your hand at disk magazine writing, you might find *Magnum* of interest. *Magnum* is a disk magazine creator. It works by looking for several files in its directory, which it will combine to create your magazine.

It will look for an index file that will contain the paths for the articles. These articles will need to be written in plain ASCII, they cannot include styles such as bold or italic. You can,

however, decide which colour your text will be displayed in.

You also have the options of modifying the control, or completely replacing it. To modify it you'll need a paint package, which you can also use to create a replacement 16-colour lo res image.

If you intend to include any graphics in your magazine, you'll need to create a file that will list their paths. The program will display any HAM, interlace or standard picture, as long as it's of an NTSC size (320x200 etc).

You can use your favourite module player for playing your music,.but if you do so, you'll be unable to stop it playing. To remedy this you can use the converter program provided to convert it to a format that can be recognised by *Magnum*.

This is quite a reasonable package, but it does have the same drawback as its peers do at the moment: no AGA-support.

Program rating 8/10

MATHSREFLEX

Magnetic Fields (Disk ED016)

This is a two disk collection of maths related educational programs. *Mathsreflex* is a relatively simple program, it basically comprises several timed tests. Despite its simplicity it is challenging and fun, although younger children might tire of it quite quickly. The tests cover addition, subtraction, multiplication, division, fractions and algebra. Unfortunately, there are one or two minor bugs in question-selection routines, as my younger sister got the same question four times in a single test.

There are two other programs that would appeal to younger children. There's *Mem*, where you take on the role of an FBI agent who is trying to capture some thieves. You have to try and memorise the criminals' faces, each of which have four distinguishing features that can be changed.

The remaining game is *Maths Adventure*. In this game you try to travel through the rooms of a castle. In each room you'll be challenged to answer a mathematical question. Get the answer wrong and you've had it. Get it right and you'll be rewarded with passage through the rooms and some information about the King's children. You'll need to memorise this information for later on in the game...

The compilation will test both the mathematical prowess and logical facilities of both parent and child. It's definitely worth a look if you have children, or simply want to dust off some mental cobwebs.

Product rating 7/10

LSD LEGAL TOOLS 143

Roberta Smith DTP

Here's yet another disk from the *LSD Legal Tools* collection. This disk is a real mixture of programs, but has a strong leaning toward the more technically minded.

First up is *AIBB* which stands for Amiga Intuition-Based Benchmarks. It's similar to *Sysinfo* as it tests your system in a number of intensive ways. It differs from most hardware benchmarks in that it tests your machine's performance in the types of tasks you would normally use it for.

AGALab is an IFF to RAW converter with a difference. Yes, you've probably guessed it, it works with AGA chipset. This is great news as it will help coders unleash the AGA machines' tremendous graphical power. Yipee!

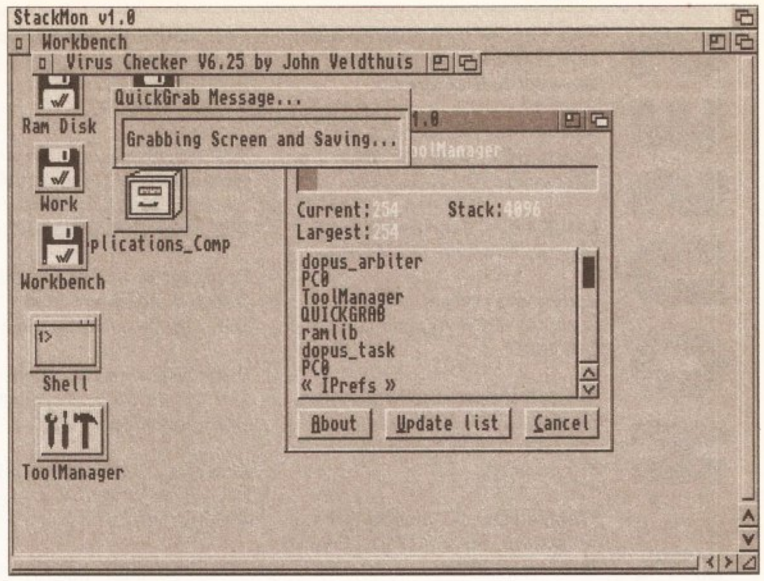
FastPar is a little more down-to-earth. Have you noticed how much your Amiga slows down when you print a large text file or picture? Well, *FastPar* helps to speed up your machine's operation while printing.

Fdiff will find the differences between two text files.

Findcolor is a tool for AGA machines that will supply names for the RGB values of your screen's colours.

Intuicalc is a replacement for the calculator tool, complete with scientific functions such as Sinh and so on.

Ira is a disassembler. It will translate your binary files and executables to assembler source code.



Keep an eye on those applications with Stackmon.

Mousometer pops up again! *Stackmon* is an interesting tool. It keeps an eye on how much of its stack a program utilises and will warn you if it is about to exceed it (your machine is likely to crash if it does).

Text2Guide will transform your text files into Commodore's Guide format. Being able to skip between different nodes of a document makes this a great document format. It makes navigating a document a lot easier. Using any editor, these files can be made by following relatively simple guidelines. Why anyone would want to learn the new set of guidelines required by *Text2Guide* is quite difficult to understand.

There are also loads of other useful programs on the disk for you to take a look at.

Product Value 8/10

INTUITEM V2.17

NBS (Disk number U809)

AMOS is a powerful and versatile programming language and a good number of the programs in the Public Domain are written in it. The language's requesters, though, are not particularly attractive and a little awkward to use.

You could program your own requesters of course, but this would take ages. Thankfully, this has already been done for you. *IntuitEm* will help you put an attractive Intuition-like interface to you AMOS programs. It gives them a professional appearance and make them easier to use as they follow a standard format.

Program rating 7/10

ONFORM AND ADDRESSPRINT 4.0

Paul Lathwell

These are two shareware packages that set out to help you keep track of your invoices and give you more control over your label printing.

AdressPrint takes a database approach to printing address labels. It will print all your addresses, a selected list of addresses, or any one address at any time.

OnForm is an invoicing program with a reasonable number of options. Its main advantage, however, is its ability to load the files created in *AddressPrint* directly.

The programs are available for £3 each, or £4.50 for both, from Paul at the following address: 3 Sweetbriar Close, Gadebridge, Hemel Hempstead, HP1 3PA.

Product rating 6/10

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board (BBS) is that often the latest software is uploaded as soon as it's available. On the downside, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the BBS as well).

There is a growing number of BBSs with a wide range of Amiga software available for download. Check out 01-for Amiga (☎ 071 377 1358) and the Cheam Amiga Bulletin Board (☎ 081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on ☎ 081 390 8446 (voice) or ☎ 081 390 1255 (modem).

If you don't want to use a BBS or haven't got a modem, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and there's a full directory overleaf. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between companies which charge 99p and those which charge £2.50 – well, try both types. Some totally professional PD houses charge less than a quid, and some incompetents charge more than twice that.

UK PD HOUSES • UK PD HOUSES

***An asterisk by a library's name means see its advert in this issue for further details.**

A1200 Only PD. Contact B J Cowdall, 27 Pheasant Way, Cirencester, Glos. GL7 1BJ.

AMOS PD, 1 Penmynydd Road, Penlan, Swansea SA5 7EH.

Amiganuts United, 1 Daffern Avenue, New Arley, Coventry CV7 8GR.

Amiga Productivity PD Series, 51 Ennors Road, Newquay, Cornwall TR7 1RB. Contact M J Docking.

***Anglia PDL,** 30 Victoria Street, Felixstowe, Suffolk, IP11 7EW, ☎ 0394 283494.

***Anim1 PD,** 2 Fatherwell Avenue, West Malling, Kent ME19 6NG.

Armchair PD, 180 Blackton Close, Newton Aycliffe, Co Durham DL5 7EY.

Artman, 40 Northwell Gate, Otley, West Yorkshire LS21 2DN. Phone ☎ 0943 466476.

Asgard PD, 20 Langdale Drive, Flanshaw, Wakefield WF2 9EW. Phone ☎ 0924 363059.

Batty's PD. Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR. ☎ 0604 22456. Life membership £3.99.

Beats Brothers, 6 Brownings Close, Pennington, Lymington, Hampshire SO41 8GX.

Belshaws PD. 55 Baldertongate, Newark, Notts. NG24 1EU, ☎ 0636 72503.

BG PD, 6 Peter Street, Whitehaven, Cumbria CA28 7QB.

Blitterchips, Cliffe House, Primrose Street, Keighley, BD21 4NN, ☎ 0535 667469.

BTK, 7 Callander Road, Catford, London SE6 2QA ☎ 081 473 1650.

Bus Stop PD. Contact Lisa or Cheryl, 6 Smiths Avenue, Marsh, Huddersfield HD3 4AN, ☎ 0484 516941.

C and C PD. Contact Chris Wildman, 3a The Cedars, Tilehurst, Reading, Berks. RG3 6JW, ☎ 0734 411131.

Chris's PD, 22 Merryfields Avenue, Hockley, Essex SS5 5AL.

Colwyn PD. Free, non-profit-making PD, membership £5 per year. Contact Andy Roberts, 17 Gladys Grove, Colwyn Bay, Clwyd LL29 7YB, ☎ 0492 533442.

Computer & Design Services, 24 Blackmoor Croft, Tile Cross, Birmingham B33 0PE. ☎ 021 779 6368

***CP PD,** (in association with NFA Productions) 3 Dunedin Crescent, Winshill, Burton on Trent, Staffs. DE15 0EJ, ☎ 0283 516736.

Crazy Joe's, 145 Effingham Street, Rotherham, South Yorks, S65 1BL, ☎ 0709 829286.

Crazy Software PD, 50 Woodville Court, Portobello, Wakefield, West Yorkshire WF2 7DU.

Deja Vu, 7 Hollinbrook, Beech Hill, Wigan WN6 7SG, ☎ 0942 495261.

***Diskovery PD,** 108 The Avenue, Clayton, Bradford, West Yorkshire BD14 6SJ, ☎ 0274 880066.

Essex Computer Systems, 118 Middle Crockerford, Basildon, Essex, SS16 4JA, ☎ 0268 553963.

Eurodisk PD, PO Box 2, Radlett, Herts WD7 8QL.

Express PD, 47 Aberdale Road, West Knighton, Leicester LE2 6GD, ☎ 0533 887061.

***Five Star PD,** 48 Nemesia Road, Amington, Camworth B77 4EL. ☎ 0827 68496.

George Thompson Services, Bridgegate Centre, Martinfield, Welwyn Garden City, Herts. AL7 1JG, ☎ 0707 391389.

GVB PD, 43 Badger Close, Maidenhead, Berks. SL6 2TE, ☎ 0831 649386.

Haven Computing, 15b Meeching Road,Newhaven East Sussex BN9 9RL,☎ 0273 513491

Highland PD. Free list contains lots of education and business disks. Contact David Paulin, 1 Whinpark, Muirtown, Inverness IU3 6NQ ☎ 0463 242431.

Holmes Brothers Compilations. Contact Craig for monthly compilation disk. 23 Rocester Avenue, Wednesfield, Wolverhampton, West Midlands WV11 3AU. ☎ 0902 733418.

Hornesoft PD. Contact Chris Horne, 23 Stanwell Close, Wincobank, Sheffield S9 1PZ, ☎ 0742 422000.

ICPUG (Independent Commodore Product Users Group), PO Box 1309, London, N3 2UT, ☎ 081 346 0050.

Immediate Arts, 26 Lyndhurst Gardens, Glasgow G20 6QY. ☎ 041 946 5798.

Judge Dredd's PD, 1 Nottingham Road, South Croydon, Surrey CR2 6LN.

***Kew=II Collection,** PO Box 672, South Croydon, Surrey CR2 9YS, ☎ 081 657 1617.

***KT's PD.** 75 The Drive, Rochford, Essex SS4 1QQ, ☎ 0702 542536.

Langham PD. Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WV8 1PL

Logic PD, 8/5 Glenalmond Court, Sighthill, Edinburgh EH11 4BE.

Magnetic Fields, PO Box 118, Preston, Lancashire PR2 2AW. ☎ 0772 881190

MegaSoft, 78 Bockingham Green, Basildon, Essex SS13 1PF. ☎ 0268 559164

NBS, 1 Chain Lane, Newport, Isle Of Wight, PO30 5QA, ☎ 0983 529594.

Network PD & Shareware Library, Kenmare, Co. Kerry, Eire. ☎ 010 353 64 41603

***NJH Computers,** 12 Meesons Mead, Rochford, Essex SS4 1RN. ☎ 0702 546796.

Numero Uno, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP, ☎ 0262 671125.

Orbital Software. Contact A Flowers, 37 The Orchard, Market Deeping, Peterborough, Cambs. PE8 8JR, ☎ 0778 342064.

Pathfinder PD, 41 Marion Street, Bingley, W Yorks. BD16 4NQ, ☎ 0274 565205.

Penguin Public Domain, PO Box 179, Reading, Berks RG3 3DD.

***PD Soft,** 1 Bryant Ave, Southend-on-Sea, Essex SS1 2YD ☎ 0702 466933.

Premier PD, 45 Fairfield Gardens, Eastwood, Leigh-on-Sea, Essex SS9 5SD ☎ 0702 520520.

Riverdene PDL, 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN, ☎ 0734 452416.

Roberta Smith DTP, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6JE, ☎ 081 455 1626.

Scribble PD, 14 Woolner Close, Barham, Suffolk IP6 0DL.

***SeaSoft Computing,** The Business Centre, 1st Floor, 80 Woodlands Avenue, Rustington, W. Sussex BN16 3EY. ☎ 0903 850378.

*** Sector 16,** 160 Hollow Way, Cowley, Oxford, ☎ 0865 774472.

17-Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Phone: ☎ 0924 366982.

Softville, 35 Market Parade, Havant, Hants PO9 1PY ☎ 0705 498199.

Software Expressions, Unit 4, 44 Beauley Road, Southville, Bristol BS3 1PY, ☎ 0272 639593.

Startronics, 4 Arnold Drive, Droylsden, Manchester M35 6RE, ☎ 061 370 9115.

Tazmania PD, 4 Boultham Avenue, Lincoln LN5 7XZ, ☎ 0522 538706 (after 6 pm).

Telescan Computer Services, Handsworth Road, Blackpool FY5 1SB, ☎ 0253 22296.

Trevan Designs Ltd, PO Box 13, Aldershot, Hants. GU12 6YX, ☎ 0483 725905 (note: modem line, not voice).

Vally PD, PO Box 15, Peterlee, Co Durham SR8 1NZ, ☎ 091 587 1195.

Virus Free PD, 31 Farringdon Road, Swindon, Wiltshire SN1 5AR ☎ 0793 512321

Visage Computers PDL. 18 Station Road, Ilkeston, Derbyshire DE7 5LD, ☎ 0602 444501.

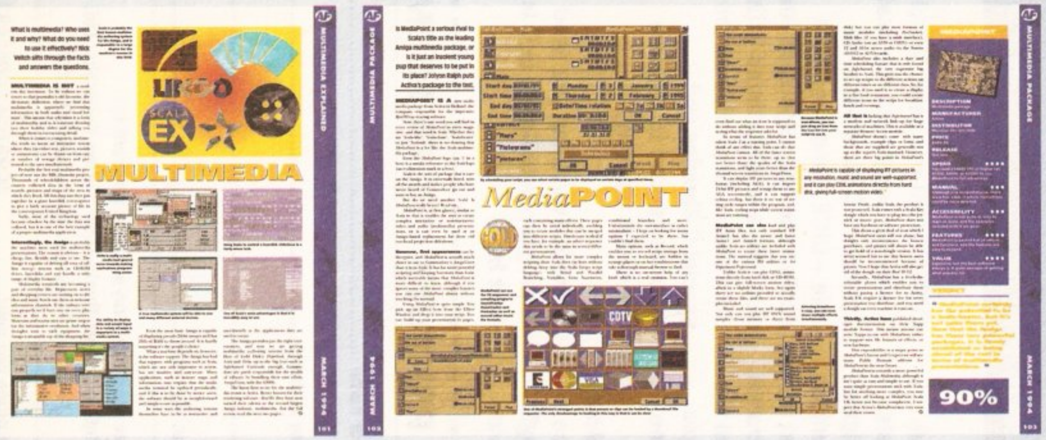
Your Choice PD Library, 39 Lambton Road, Chorlton-cum-Hardy, Manchester M21 1ZJ. Phone 061 881 8994.

BUYER BEWARE: The inclusion of a PD library in this directory does not imply that *Amiga Shopper* endorses or recommends any PD library in any way. We can accept no responsibility for any dealings you may enter into or for any difficulties you may encounter.

- When you write to any of these libraries for a catalogue, include an SAE for its return. Some libraries ask that you send a blank disk as well.
- If a library is named in a review, this means that that library provided us with the disk reviewed. Given that PD can be freely copied, the same program may well be available legitimately from several libraries.
- If you run a PD library not listed here and wish to be included, or if you want to amend any information given, send full details and a copy of your latest catalogue to:

PD Directory, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW.

CREATE: the latest multimedia moves for your machine







DISCOVER: the serious side of CDs and the best software buys



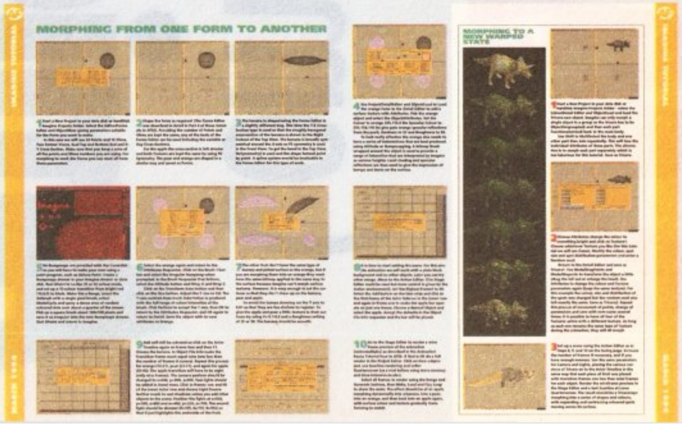




LEARN: Guides to programming and tech questions answered







PRODUCT LOCATOR

PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN

***Amiga Shopper* Buyer's Guide tells you what's hot and what's not in the Amiga market. It's a comprehensive guide to help you make the right buying decisions. We'll be updating it as new products are released. This month we deal with public domain software. For reasons of space, it may not include every PD package ever produced for the Amiga – for details of the latest products, see our regular PD reviews section (see page 111).**

BUSINESS SOFTWARE

Program	Library	Disk	Type	Issue	Rating
AMaster	Fred Fish	Fish 824	Simple Adress book database	27	**
AZSpell	Digitz	Utl277	Spell checker	13	****
Account Master	Various	–	Home accounts program	19	****
AmiBase Pro 3	AmigaNuts	–	Powerful database	9	****
AmiCash	PS Soft	V630	Home accounts	16	***
AmigaDex	PD Soft	V757	Pop up address book	19	*****
AmigaFox	Office Choice	U173	Combine text with graphics	8	**
Atbl	Fred Fish	Fish 746	Unix-like table formatting utility	22	****
BBase III	Fred Fish	Fish 860	Powerful database program	28	*****
BuddBase 1	Deja Vu	L/28	Powerful database program	22	*****
Cruiseword	PD Majik	–	Word processor	16	**
DataBench	Fred Fish	820	Very good PD database	26	****
EasyBanker	GTS	Home2	Home finance program	10	****
Epoch	NBS	U726	Pop up address book and calendar	22	**
Forms Really Unlimited	PD Soft	V782	Create your own business forms	21	*
Home Business Pack	Anglia PD	HB1	Database, spreadsheet, wp	25	*****
Home Manager	PD Soft	V660	Personal organiser	16	*****
HomeHelp	GTS	Home1	Computerised grocery lists	10	****
I-Man	GTS	Home2	Inventory list management	10	***
Inspire Demo	Fred Fish	815	Powerful word processor	26	*****
JCGraph Demo	Fred Fish	Fish 760	Demo of shareware graph program	23	*****
Liner	Fred Fish	285	Ideas processor like Flow	10	****
MultiPlot	Fred Fish	467	Data graphing program	7	****
NewPRT	Digitz	149	Printer drivers for PageStream	10	****
PageStreamFonts	Digitz	149	Fonts for PageStream	10	*****
PaperBack!	Fred Fish	Fish 749	Create printed booklets with ease	22	*****
Philo	Startronics	N/A	Databases for beginners	21	*
Power Base	Deja Vu	Licenseware	Database	15	*****
Power Planner	Deja Vu	Licenseware	Diary/telephone book	15	***
PowerSnap	Fred Fish	542	Grab screen text as ASCII file	8	*****
PowerText	Deja Vu	Licenseware	Word processor	18	*****
QuickFile	Fred Fish	820	Absolutely awful PD database!	26	None!
Stock Control 1.0	Deja Vu	L/111	Powerful stock control utility	23	****
TextEngine 3.0	Digitz	277	Word processor	13	***
TextPlus 3.0	PDSoft	V261	Word processor	1	****
UEdit	AmigaNuts	1162	Text editor	8	****
WBase	Anglia PD	U4015	Pop up Workbench database	18	**
WFILE	Fred Fish	776	Convert PC and Mac text files	24	****
Will&Testament	PD Soft	V706	Template for wills	19	*****
Word Power	Deja Vu	Licenseware	Spell checker	17	****
WordWright	PDSoft	V28	Word processor	13	****
CDTV Player	Fred Fish	Fish 759	Play Audio CDs from WB on A570	23	*****

MUSIC UTILITIES

Program	Library	Disk	Type	Issue	Rating
CZED	Fred Fish	223	Patch editor for Casio synths	10	*****
Desktop Harp	Various	–	Collection of tunes	18	*****
K1 Editor	Fred Fish	332	Patch editor for Kawaii K1	10	*****
MED 3.11	AmigaNuts	973	Sound Tracker	1	*****
Module Master	TBAG	58	Play modules in various formats	9	****
Module Processor	AmigaNuts	864	Convert modules to executable	1	***
Nutcracker Suite	17-Bit Software	N/A	Tchaikovsky's Nutcracker suite	21	****
Rippers Disk	17Bit	1055	Rip modules from memory	5	****
Sound Ed	Fred Fish	486	Sample editor	5	****

EMULATORS

Program	Library	Disk	Type	Issue	Rating
A64	AmigaNuts	1030	Commodore 64	3	*****
IBEM	VirusFree	1485	PC compatibles	3	****
QL Emulator	AmigaNuts	1030	Sinclair QL	3	***
ST Emulator	Digitz	Utl149	Atari ST	15	***
ZX Emulator	AmigaNuts	1030	ZX Spectrum	3	****

VARIOUS UTILITIES

Program	Library	Disk	Type	Issue	Rating
A-Gene	AmigaNuts	933	Genealogy program	1	****
ABackUp	Fred Fish	Fish 759	Hard Disk backup utility	23	****
AIBB	PD Soft	V948	Standard benchmark program	25	*****
ARTM	17Bit	1274	System monitor	7	*****
ARestaure	Fred Fish	Fish 760	Restore deleted files	23	*****
AWP	Fred Fish	554	Animate WB2.0 clock pointer	11	****
AniMan	Fred Fish	722	Voice control your Amiga	20	***
Anti-Virus	Soft Expression	U155	Kill those viruses	19	*****
AppiSizer	Fred Fish	Fish 853	Find out size of drawer easily	28	*****
Arq	CIX Download	–	Improved system requesters	8	*****
Assassins Handy Tools	Aardvark PD	U186-188	Three disks of handy utilities	23	***
Astro 22	PD Soft	V685	Astrology program	17	****
AutoSave	Fred Fish	771	Execute ARexx script at regular intervals	24	****
Avail Mem	Fred Fish	285	Graphical memory monitor	10	***
BackUp	Fred Fish	724	Hard disk back-up utility	20	*****
Badger	Fred Fish	543	Event scheduler	13	***
Banner	TBAG	52	Print huge banners	10	****
Boot Logo	Fred Fish	Fish 754	Display picture during boot up	23	****
BootJob	Fred Fish	Fish 760	Store game bootblocks on disk	23	**
ButExchange	Fred Fish	494	Reverse mouse buttons	9	****
C Commands	PD Soft	V586	Even more CLI commands	18	***
CFX	Fred Fish	Fish 750	File type identifier	22	*****

PUBLIC DOMAIN

PRODUCT LOCATOR

CG Fonts	PD Soft	V713	Lots of Compugraphic fonts	19	****
Cass 1.1	Fred Fish	579	Make your own cassette covers	13	***
ClockTick	TBAG	58	2.0-like clock mouse pointer	9	****
Command.COM	17Bit	866	CLI commands in RAM	2	***
Cook & Stitch	GTS	-	Learn to cook, stitch and brew beer!	25	***
Date2Day	Fred Fish	Fish 826	Tells you day when given date	27	*
DCopy	AmigaNuts	700	Disk copier	10	****
DeafLab	Fred Fish	494	Sign language utility	9	***
DevRen	GTS	Utils1	Rename devices including DF0	10	****
Disk Manager 2	Various	–	Disk cataloguing program	20	****
DiskMate	Fred Fish	754	Powerful Workbench disk copier	28	*****
DiskSpeed	GTS	Utils1	Disk drive benchmark program	10	****
Distance	Deja Vu	Licenseware	HAM radio utility	20	****
DragIt	Fred Fish	792	Drag a window without using drag bar	25	*****
Ego Mouse	Fred Fish	778	Make your mouse point where it's going	24	**
Electronic baby book	PD Soft	V658	Record your baby's details	16	****
Elements	Fred Fish	593	Periodic table of elements	13	****
FastDiskII	GTS	Utils1	Disk optimiser	10	***
FastIntroMaker	Fred Fish	814	Create your own scolly demos	26	****
File & HD Utilities 6	PD Soft	V978	Selection of file and hard disk utilities	25	**
File & HD Utils 3	PD Soft	V815	Various file and hard disk utilities	21	****
File and HD management	PD Soft	V573	Hard drive utilities	15	*****
File and HD management 2	PD Soft	V575	More hard drive utilities	16	***
FileMaster	GTS	Utils1	Binary file editor	10	*****
FileSearch	Fred Fish	531	Find files on a hard disk	11	***
Filer	Fred Fish	562	SID clone for Workbench 2.0	11	****
FindIt	Fred Fish	Fish 731	Search for named files on any disk	22	****
Flash Disk	GTS	Utils2	Disk optimiser	10	****
Font Manager	Digitz	149	Manage your bitmap fonts	10	****
Fontviewer	Fred Fish	Fish 732	Keep track of all your bitmapped fonts	22	****
Format 1.1	Fred Fish	535	Replacement disk formatter	11	*****
Formatter	GTS	Utils1	Replacement disk formatter	10	***
GeoTime	Fred Fish	Fish 758	World Time Zone Display	23	*
GrabKick	Fred Fish	Fish 831	Grabs Kickstart ROM to disk file	27	****
GraphPaper	Fred Fish	Fish 851	Prints graph paper to printer	28	***
HAM Radio	Aardvark PD	–	HAM radio utilities	18	****
HAMLab 2 Demo	Fred Fish	726	Powerful image processor	20	*****
Hard Drive Special	GTS	–	Collection of hard drive utils	9	*****
Hyper	Fred Fish	Fish 853	View AmigaGuide files	28	*
Icon Mania	PD Soft	V730	Lots of new icons	19	**
Imploder	Fred Fish	422	File compressor	7	***
InputLock	Fred Fish	494	Turn off mouse and keyboard	9	****
Install 1.2	Fred Fish	817	Workbench Install disk utility	26	*****
KeyCall	Fred Fish	Fish 854	Load programs via hotkeys	28	*****
KingFisher	GTS	-	Database of Fred Fish disks	5	*****
LC24-200 Fonts	NBS	L503	Fonts for Star printers	8	****
LS	Fred Fish	772	Very powerful Unix-like 'LS' command	24	*****
Label Print	Fred Fish	227	Disk label printer	10	***
LabelMaker	Fred Fish	548	Create disk labels	11	***
LockDevice	GTS	Utils1	Better AmigaDOS 'Lock' command	10	****
LockIt	Fred Fish	798	Password protect your files	25	****
MKSLens	Fred Fish	574	Magnify area of screen	11	***
Macro 1.0	Fred Fish	786	Record and playback user inputs	24	****
Magnetic Pages	PD Soft	V688	Create your own disk magazine	17	*****
Main Event	Soft Expression	U149	Event scheduler	20	****
Master Virus Killer	AmigaNuts	971	Virus killer	1	****
MegaStation	Five Star PD	U195	More CLI commands	18	***
Megad 2.0	Fred Fish	Fish 736	Brilliant SID-like directory utility	22	*****
Menu Runner	AmigaNuts	1024	Run programs from menu	8	***
MessyDOS	NBS	U619	Read and write PC disks	6	*****
MessySID 2	PDSoft	V490	Access PC disks with ease	13	*****
Minix Demo	PD Soft	V711	Demo of Unix-like OS	19	*****
Morse Tutor	Deja Vu	L101	Teach yourself Morse Code	19	*****
New Aqua	Fred Fish	Fish 837	Database of Fred Fish library	27	*****
NicePrefs	Fred Fish	780	Extra WB 2.0 Preference programs	24	*****
Outline fonts	George Thompson	–	For ProPage and PageStream	16	*****
PWKeys	Fred Fish	494	Manipulate windows with hotkeys	9	***
Pager	Fred Fish	Fish 824	Add page numbers to documents	27	***
Password	Fred Fish	804	Password protect a hard drive	26	****
Pools Tools	NBS	U725	Pools predictor	22	***
PopUpMenu	Fred Fish	Fish 756	Modified Workbench menus	23	****
Post	Fred Fish	Fish 828-830	PostScript interpreter	27	*****
PowerPacker Utils	Fred Fish	542	Utilities for PowerPacker	11	***
Printer Drivers	PD Soft	V724	Star and Canon printer drivers	19	*****
QC	Fred Fish	788	Display information on CLI/Shell	24	***
QDisk	Fred Fish	Fish 853	Get size of AmigaDOS volumes	28	****
QMouse	Fred Fish	789	Mouse accelerator utility	24	*****
RMBShift	Fred Fish	547	Select multiple icons	11	****
Recover	Digitz	149	Rescue files from corrupt disks	10	***
RunMe	AmigaNuts	1186	Run programs from menu	9	*****
S-Text	Fred Fish	Fish 760	Create stand-alone text files!	23	**
School TimeTable	AmigaNuts	1100	Generate school timetables	5	***
ScreenMOD	TBAG	58	Modify screens and windows	9	***
SetNoClick	GTS	Utils1	Turn off annoying drive click	10	***
Sid 2	17Bit	–	Directory utility	16	*****
SingleFile	Fred Fish	Fish 851	Checks hard disk for duplicate files	28	***
Sksh	Fred Fish	791	Unix 'ksh'-like Shell	25	*****
Smart Icon	Fred Fish	316	Iconifies windows	10	***
Snap 1.4	Fred Fish	326	Grab screen text into clipboard	10	****
StarClock	Fred Fish	814	Display time in StarTrek fashion	26	***
SuperDark	Fred Fish	Fish 835	Modular screen blanker	27	****
Super Format	Fred Fish	Fish 835	Workbench 2.1-like disk formatter	27	*****
SysInfo	Fred Fish	571	System information program	11	*****

PRODUCT LOCATOR

PUBLIC DOMAIN

PRODUCT LOCATOR

SysInfo 3.11	Fred Fish	–	Latest version of system analyzer	26	*****
ToolsDemon	Fred Fish	561	Run programs for 2.0 Tools menu	11	****
Touch typing tutor	NBS	CLU03	Teach yourself touch typing	17	****
Track Display	GTS	Utils1	Shows position of drive heads	10	***
Twilight Zone	Fred Fish	782	After Dark-like screen blanking utility	24	*****
UnixDirs	Fred Fish	Fish 850	Unix-like directory movement	27	*****
VCR Tape Filer	Fred Fish	721	Organise your video collection	20	***
VirusZ	Fred Fish	786	Virus Killer	26	*****
WordFinder-Plus	Virus Free PD	Licenseware	Crossword puzzle solver	21	****
Words 3	AmigaNuts		Solve anagrams	9	***
X-Stitch	Deja Vu	Licenseware	Pics to knitting patterns	19	****
XSearch	Fred Fish	804	File searching utility	26	***

COMMS UTILITIES

All 1.35	fred Fish	825	Intuition-based archiving toll	27	****
BBBBS	Fred Fish	729	Bulletin Board System	20	****
LHA 1.11	Fred Fish	593	Archiving utility	13	****
NComm	17Bit	1275	Terminal Program	7	****
Phone Line Watcher	TBAG	58	Keep track of phone bill	9	****
Term 3.1	Fred Fish	Fish 831-833	Best Amiga comms program available	27	*****

PROGRAMMING UTILITIES

Acc Assembler	AmigaNuts	–	Fast Assembler	6	*****
Amiga E	Fred Fish	–	Programming language compiler	26	****
Amiga Pascal	Fred Fish	Fish 849	Amiga version of Pascal language	27	****
BRef	Fred Fish	494	BASIC cross referencing utility	9	****
Copper Master	AmigaNuts	1083	Generate Copper Lists	5	***
DICE	Fred Fish	443	C Compiler	3	*****
DPU	Fred Fish	721	Hex disk and file editor	20	****
Frac	AmigaNuts	1251	Adventure game creator	18	****
GadTool Box	Fred Fish	Fish 731	Create Intuition font ends	22	*****
ICalc	Fred Fish	Fish 742	Brilliant Shell-based calculator	22	*****
MIDI Library	Fred Fish	227	Program MIDI applications	9	*****
Map Editor	AmigaNuts	–	Map editor for AMOS	19	****
MegaEd	Fred Fish	Fish 743	Powerful text editor	22	*****
MemSnap	Fred Fish	Fish 826	Trace lost allocated memory pools	27	****
MinTerm	Fred Fish	Fish 560	Calculate blitter minterms	28	****
NorthC	AmigaNuts	1112	C Compiler	6	****
PCQ Pascal	AmigaNuts	1113	Pascal compiler	6	****
Power Logo	EdLib	24	Enhanced Logo Interpreter	9	***
Remm and Rams	Deja Vu	Licenseware	Map editor and scroller utilities	17	***
Stripit	Fred Fish	Fish 750	Strip comments from ascii source code	22	****

GRAPHICS UTILITIES

3D Objects Disk 1	AmigaNuts	–	Collection of Sculpt Objects	8	****
3DFont	17Bit	1007	Text to Sculpt Object	3	***
AMOS Paint	Deja Vu	83	Paint package	3	***
BezSurf 2	Fred Fish	315	Create shaded 3D objects	10	***
CMDemo	Fred Fish	Fish 757	Demo of ASDG's CineMorph	23	***
Converters	17Bit	1221	Image conversion tools	9	***
DPaint Tutorial	Soft Express	U160	Comprehensive DPaint tutorial	22	*****
Deluxe Draw	Slipped Disk	18	Paint package	3	**
Desktop video pack 2	Anglia PD	–	Various DTV utilities inc titler	17	***
DrawMap	Fred Fish	315	Generate maps of the world	10	***
FracScape	Various	–	Fractal landscape generator	18	*****
HAMLab	AmigaNuts	1149	Image processing	3	**
ImageLab	PDSoft	V518	Image processing program	12	****
LandBuild	AmigaNuts	1190	Fractal landscape generator	9	**
Mandel Mountains	Softville	751	Creates 3D Mandelbrots	5	****
MapTrix	Fred Fish	Fish 853	Fractal texture mapping utility	28	*****
PictSaver	Fred Fish	543	Grab screens in IFF Format	9	*****
Plasma	Fred Fish	573	Fast fractals program	11	***
SkyPaint	TBAG	37	Text-based graphics	3	***
SlideShow Kit	VirusFree	1465	Create your own slideshows	3	****
SpectraPaint	Slipped Disk	19	Paint package	3	****
Sprite Designer	AmigaNuts	1102	Create animated sprites	6	**
Vector Designer	AmigaNuts	–	Vector graphics designer	9	**
Video Text Displayer	AmigaNuts	1199	Basic text scroller	9	***

EDUCATIONAL SOFTWARE

4 Stroke Engine	PD Soft	V738	Demonstrates 4 stroke engine	19	****
CPK	Fred Fish	809	Create rendered molecule illustrations	26	****
Complete Bible	PD Soft	V715-717	Complete Bible on three disks	19	****
Constellations	Astronomy News	–	Info on stellar constellations	20	***
Drafu	fred Fish	Fish 854	Function plotting utility	28	***
JigMania	Deja Vu	LPD13	Maths/Logic	5	****
Learn&Play	Riverdene	Mis637	Maths/Reflex/Logic	5	****
MathPlot	Fred Fish	Fish 850	Mathematical function plotter	27	****
Maths Reflex	Anglia PD	C728	Test your maths	20	****
Maths4Fun	AmigaNuts	1146	Maths	9	****
Quingo	Deja Vu	LPD21	3 'R's	5	***
Runes	DTP	OS125	Mystic runes explained	18	***
Shapes	Riverdene	GAM907	Maths/Logic	5	****
Simon	Deja Vu	APD135	Reflex/Memory	5	***
Space Maths	Deja Vu	APD135	Maths	5	****
Spell4Fun	AmigaNuts	1146	Spelling	9	****
TouchStones	Deja Vu	LPD18	Logic	5	****
Treasure Search	Deja Vu	APD2	Maths/Logic	5	***
WarBook	Asgard Software	Freeware	History of World War 2	21	***
ChemBalance	Fred Fish	Fish 759	Balance chemical equations	23	****
XTables	AmigaNuts	1146	Maths	9	*****

FOR SUPPLIER INFORMATION ON ALL THE PRODUCTS LISTED ABOVE SEE UK PD HOUSES PAGE 104

BUYING ADVICE FOR SHOPPERS

Whether you're buying over the phone or at a local store, here's our advice on getting what you want.

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that everything works properly.
- Make sure you have all the necessary leads, manuals or other accessories you should have.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy and make sure you confirm all the technical details. Things to bear in mind are version numbers, memory requirements, other hardware or software required, and compatibility with your Amiga (be sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

Again, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up. Also make sure you keep copies of all correspondence.

MAKING RETURNS

However you bought it, you are entitled to return a product if it fails to meet one of the following criteria:

❶ The goods must be of "merchantable quality".
❷ They must be "as described".
❸ They must be fit for the purpose for which they were sold or for the purpose you specified when ordering.

If they fail to satisfy any or all of the criteria, then you are then entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.

When returning a product, ensure you have proof of purchase and that you return the item as soon as possible after receiving it. That's why it is important to check it thoroughly as soon as it is delivered.

HOW TO PAY

❶ *Amiga Shopper* strongly recommends that all purchases from our advertisers are made with a Credit Card. That way, in the unlikely event of a problem, redress may be sought from the Credit Card company.
❷ If you do pay by cheque or postal order, in strictly limited circumstances after a company has gone into liquidation, *Amiga Shopper* may be able to help you up to a maximum of £100 or 50 per cent of the purchase price – whichever is the lower – per order placed.
❸ All cheque or postal order queries should be sent to Alison Winter at Future Publishing, 30 Monmouth Street, Bath BA1 2BW, within 90 days of your order having.been placed. Please supply full proof of purchase.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different sources charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit-making operations. AS

BUYING BY MAIL

• Before you send any money, ring the supplier to confirm that the item you want is in stock and when the delivery is likely to be made. Enquire about returning unwanted goods and the supplier's refund policy. Find out about hidden extras like postage and packing charges, and whether the prices quoted include VAT.

• Beware of companies that do not include an address in their adverts.

• If ordering goods of more than £100 in total value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.

• Always buy from the most recent issue of *Amiga Shopper.*

• When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier immediately. If something doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.

• If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory – check the local council listing).

• Always keep records of correspondence with any mail order company you deal with and also make a note of where and when you saw the product advertised. False or misleading advertising is an offence, and suppliers must stick to what they've said in adverts.

ADVERTISERS INDEX

AMIGA SHOPPER
Issue 35 – March 1994

Editor:	Cliff Ramshaw
Art Editor:	Nick Aspell
Production Editor:	Anna Grenstam
Cover Disk Editor:	Cliff Ramshaw
Technical Writer:	Graeme Sandiford
Consultant Editors:	Jeff Walker, Mark Smiddy
Contributors:	Jason Holborn, Gary Whiteley, Dave Winder, Toby Simpson, Jim Hawkins, Paul Overaa, Pat McDonald
Additional Subbing:	Steve Faragher
Photography:	Rob Scott
Cover illustration:	Graeme Sandiford
Ad Manager:	Margaret Clarke
Ad Production Manager:	Tracy O'Donnell
Ad Design:	Lisa Withey
Production Technicians:	Jon Moore, Mark Gover, Jason Titley, Simon Windsor, Chris Stocker
Group Production Manager:	Judith Middleton
Production Controller:	Claire Thomas
Production Control Assistant:	Megan Doole
Paper Controller:	Fiona Deane
Admin Assistant:	Suzannah Angelo-Sparling
Publisher:	Stuart Anderton
Group Publishing Director:	Greg Ingham
Musician Of The Month:	Eddie Van Halen (again)

Member of the Audit Bureau of Circulations
ABC Audited circulation January – June 1993: 45,290

Printed by Southernprint Ltd, Poole, Dorset
ISSN 0961-7302 Printed in the UK
Circulation Manager: Jon Bickley
News Trade Distribution –
UK: Future Publishing 0225 442244
Worldwide: MMC Ltd 0483 211678

Editorial: 30 Monmouth Street, Bath, Avon BA1 2BW
☎ 0225 442244 Fax: 0225 446019
E-mail: amshopper@cix.compulink.co.uk

Advertising: Rayner House, 23 Higher Hillgate, Stockport SK1 3ER. ☎ 061 474 7333 Fax: 061 476 3002

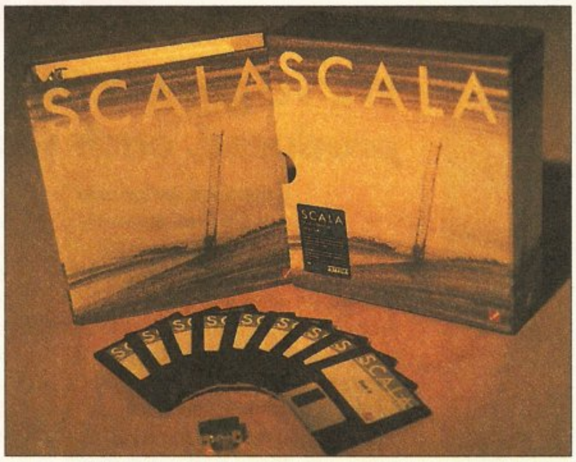
Subscriptions: Future Publishing, Somerton, Somerset TA11 6TB. ☎ 0458 274011

IN NEXT MONTH'S ISSUE MULTIMEDIA – THE TRUTH

We've all heard plenty about multimedia, been bombarded by the hype, puzzled over the ridiculous definitions; some of us even went out and bought CDTVs, and are now left breathing the exhaust fumes of a still-accelerating technology.

But things are becoming clearer – standards are being set, software and hardware is becoming powerful enough to fulfill some of those early promises. We think it's time to take a fresh look at the whole scene.

Next month we'll be presenting you with the straight facts about multimedia, about what it can do for you now, and what its potential is for the future.



We dispell the magic of multimedia and discover what it can really do for you. Is it just hype, or an important role of the Amiga in the future? Find out next month.

CD-ROM drives are becoming increasingly popular on Mac and PC platforms, we explore the possibilities of adding them to the various Amiga models. Just how cheap and easy is it? And does the Amiga-compatible software available make doing so worthwhile?

We'll also be looking at presentation software. With it, you have the package vast quantities of information – text, still pictures, animations, sound effects and music – in a clear, concise, easy-to-access and intelligent form for an enormous diversity of applications. How might this effect the way we learn in the future, and what sort of information can we expect to have access to? As you can see, the question of multimedia involves far more than mere technical considerations. You can trust *Amiga Shopper* to give you that little bit more depth.

We'll be changing tack with our cover disks as of next month. From now on in, we'll only be including a disk with the magazine when we have something *really* special. So you can bank on next month's disk having a real stonker of a program on it – but you'll have to wait until 5 April to find out exactly what. You won't be disappointed. AS

WIN A YEAR'S FREE SUBSCRIPTION

Where did sci-fi illustrator Chris Foss study art? Send your answers to "It certainly wasn't Alpha Centauri", *Amiga Shopper*, 29 Monmouth Street, Bath BA1 2DL. The closing date is Thursday 17 March. As usual, the first correct answer wins a year's free subscription. Last month's winner was Chris Firth of Cowes, the Isle Of Wight.

YOU'VE WON!

We've got four lucky people who'll very soon each be receiving a copy of *ReSource*, the interactive disassembler, through the post. Those marevellously blessed people are: Mark McVickers of Stirlingshire in Scotland, Richard Harrison of Preston, Lancashire, Mr A Murphy of Anglesey in Gwynedd and Wayne Bosworth of Rothwell in Northants.

Congratulations to you all and condolences to the rest of you. Next time, eh?

MAG*SAVE

DON'T RISK DISAPPOINTMENT – MAKE SURE YOU RESERVE A COPY OF YOUR FAVOURITE MAGAZINE AT YOUR LOCAL NEWSAGENT NOW!

DEAR NEWSAGENT, Please reserve/deliver me a copy of *Amiga Shopper* every month, beginning with the May issue, which goes on sale on Tuesday 5 April.

Name ____________________

Address ____________________

____

____

Phone ____________________

• NOTE TO NEWSAGENT: *Amiga Shopper* is published by Future Publishing (0225 442244) and is available from your local wholesaler.

• PS Oh, and if you do have any problems getting hold of your favourite Amiga mag, call Kate Elston on 0225 442244 and she'll help you out.

AMIGA SHOPPER

AT-A-GLANCE GUIDE

To help you find what you want quickly and easily, here is a cross-referenced list of everything covered in this month's *Amiga Shopper*. You'll find a detailed index to the problem-solving *Amiga Answers* section on page 37. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:
***Amiga Shopper*,**
30 Monmouth Street,
Bath, Avon BA1 2BW.

WIN • WIN • WIN • WIN • WIN • WIN

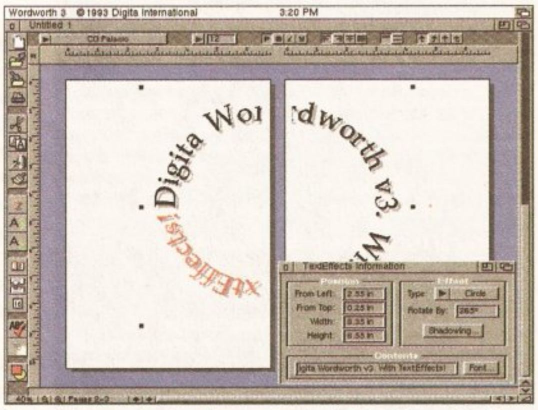
Power up your words

We've got the first three copies of Wordworth 3 to be produced, each worth £150, waiting for you to win.

As the keen Amiga user you are, you obviously read Mark Smiddy's preview of Wordworth 3 in issue 34 of your favourite magazine, *Amiga Shopper*. If you did, you already know it's going to be pretty damned hot .

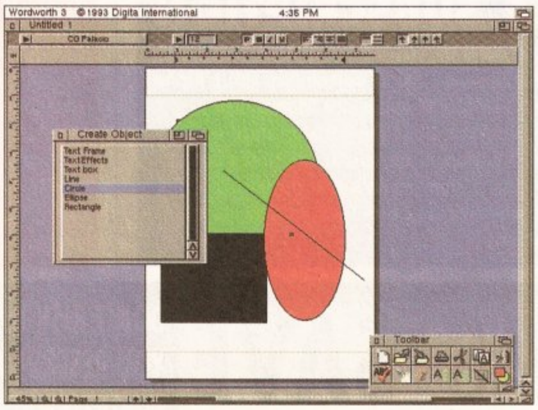
It could also be yours without you having to fork out the £150 it costs. Yes, that's right, we're giving away three copies of this brilliant word processing program, kindly donated by Digita International. And we're not just talking about any old three copies here. Oh no, not at all – they're the first three copies to come off the production line. All you have to do is correctly answer the three questions in the box below and get lucky. Easy.

The brains behind *Wordworth 3*, Digita International, have once again pushed back the boundaries of word processing. This is not a simple upgrade of the original, but a complete reworking that finally leaves its *Workbench 1.3* roots behind. *Wordworth 3* requires at least 2Mb RAM, two disk drives and Workbench 2. All the useful features that were included on the earlier version are still there, but with extensive improvements and some beautiful new facilities thrown in to make the creation of your literary masterpieces as painless as possible. It conforms entirely to the Workbench 3 style guidelines and is said to be the closest thing yet to a Macintosh application running on an Amiga.



If you've ever had a strong desire to twist your text into a circle, then Wordworth 3 is the program for you.

The feature that really separates the men from the boys, so to speak, is something Digita call Text Effects. With it, you can make your presentations really shine and impress the boss, or nearest jealous Amiga-owning neighbour. Text Effects are essentially frames of text that can be spun, flowed around paths, coloured and manipulated in all sorts of wild and wonderful ways.



Wordworth 3 comes with several, graphics tools, and enables you to have requesters open while you work.

Combine this with its greatly enhanced graphics support, its new Tables facility that lets you create tables of items without all of that tedious mucking around with tabs, its clear, slick and easy-to-use requesters that can be left on the screen while you work with the program, its two toolbar buttons, its ability to correct typing mistakes, the 50 Agfa fonts that are supplied with it, its ability to make Solomon-like pronouncements on moral dilemmas – actually, no, that last one is a lie, but you can see it is, in a very real sense, a "fully-featured" program.

So, our advice to you is to put your thinking cap on, grab a pen and jot down the correct answers to those not-so-tricky questions, along with your name and address, on a postcard or sealed envelope. Send said item along to the usual address:

Wordworth 3 Competition
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

To ensure your chance of success, you'll need to get that postcard in to our office by the 8 April. If you don't want to be on a mailing list, please state so clearly on your entry. AS

THE QUESTIONS

This time our format's a little different. We're just giving you the questions, and no answers to choose from. Evil, aren't we?

1. What is the Spanish word for three?

2. Name the Three Musketeers.

3. What did the Three Wise Men bring to Jesus' birth?

WIN • WIN • WIN • WIN • WIN • WIN

At Last!

A double-decker that won't keep *you* waiting.

Introducing

KCS HD²

Dual, High-Density Floppy Drive



"It is the most important and singularly useful product I have seen since Amiga Shopper began." Amiga Shopper - January 1994

- More storage than any other Amiga floppy drive featuring 960K and 2Mb extended formats and up to approx.2Mb (DD) or 4Mb (HD) using automatic, real-time compression.
- Faster than any other Amiga floppy drive.
- Workbench 3.0 DCFS filing system (Kickstarts 1.2+).
- Transparently supports all Amiga filing systems and disk capacities: 880K, 1.76Mb, OFS, FFS etc. Fully compatible with the A4000's high-density disks.
- Built in protection against bootblock viruses.
- Autoboot feature with all Kickstarts.
- Compatible with the KCS Power PC Board.
- Works with all Amigas running Kickstart 1.2 or higher.
- Includes hard drive backup software.
- Reads and writes PC disks on any Amiga.
- High-speed analogue external disk copier.
- Includes software track display.
- Low-power consumption.
- Low-profile case - colour matched to Amiga.
- Easy to install and customise.
- Whisper quiet NEC mechanisms.
- Hardware compatible with Blitz, Synchro Express, Cyclone and Cyclone T2.
- Developed in the Netherlands by Kolff Computer Supplies, producers of the acclaimed KCS Power PC Board.

Comparison by Feature

Features	Competitor	KCS HD²
Kickstart	2.04+	1.2 or better
Double-density	880K formatted	better than 2Mb
High Density	1.76Mb formatted	better than 4Mb
Filing Systems		
FFS	Workbench 2.04+	Yes - all Amigas
International	Workbench 2.1+	Yes - all Amigas
PC 720K	Workbench 2.1+	Yes - all Amigas
PC 1.44M	Workbench 2.1+	Yes - all Amigas
DCFS	Workbench 3.0	Yes - all Amigas
Software		
HD backup	At extra cost	Yes. Software inc
Track Display	No	Yes
FastCopy	No	Yes
Copier Hardware		
Synchro Express	At extra cost	Internal emulation
Blitz	At extra cost	Internal emulation
Cyclone	At extra cost	Internal emulation
Clone T2	At extra cost	Internal emulation

Copyright, Designs & Patents Act 1988

KCS and their agents do not condone the practice of piracy. To use the copier hardware you must purchase your own copy of the appropiate software

While stocks last - at a giveaway price! The famous KCS Power PC Emulator is still available for the A500 (Kickstart 1.3) and big box models with adaptor. This remarkable hardware turns your machine into an 11MHz IBM PC clone with colour VGA and 1.44Mb disk possibility. To qualify for this limited offer call Bitcon now!

Only £199.95 inc.

Available from all good stockists or direct from Bitcon Devices Limited. KCS HD² is just a short telephone call away.

Bitcon Devices Limited, 88 Bewick Road, Gateshead, Tyne and Wear NE8 1RS
Tel: 091 490 1919 Fax: 091 490 1918

All trademarks and registered trade marks are acknowledged